SECTION 6

Performance Objectives and Acceptance Criteria

The overall performance objective is to ensure the remedial design/remedial action is implemented in such a manner that all work performed:

- Complies with federal, state, and local regulations
- Protects human health and the environment
- Provides the owner with a usable product intended to meet the project objectives
- Is cost effective

SECTION 7

Testing Requirements

The QC manager is responsible for ensuring the subcontractor performs all testing required, as identified in the final approved work plans. Completion of field tests will be documented in the Testing Plan and Log (Attachment 1). The QC manager will obtain all test results from the subcontractor, update the Testing Plan and Log at least weekly, and maintain the records onsite in the project files. A copy of the Testing Plan and Log will be submitted to the QC manager at the end of each month.

As project-specific tasks are identified, the Testing Plan and Log will be amended to include monitoring tests and observations for those tasks. Table 7-1 lists specific monitoring requirements and observations.

Table 7-1. Construction Monitoring Tests and Observations by Task
Old American Zinc Superfund Site Fairmont City, St. Clair County, Illinois

Task	Monitoring Test / Observation	Frequency
Utility survey		Once
Site preparation/ construction	Erosion and Sediment Control Measures	Daily
Initial material testing	Low-Permeability Soil Atterberg Limits (ASTM D 4318)	1 per fill source
Initial material testing	Low-Permeability Soil Particle Size Analysis (ASTM D 7928 and ASTM D 6913)	1 per fill source
Initial material testing	Low-Permeability Soil Moisture Content (ASTM D 2216)	1 per fill source
Initial material testing	Low-Permeability Soil Classification (ASTM D 2487)	1 per fill source
Initial material testing	Certification that material is free from environmental contamination	1 per fill source
Initial material testing	Low-Permeability Soil Compaction Curves (ASTM D 698)	1 per fill source
Initial material testing	Vegetative Cover (topsoil) Maximum Particle Size (ASTM D 7928 and ASTM D 6913)	1 per source
Initial material testing	Vegetative Cover (topsoil) Organic Content	1 per source
Initial material testing	Vegetative Cover (topsoil) pH	1 per source
Initial material testing	Certification that material is free from environmental contamination	1 per source
Construction	Low-Permeability Soil Particle Size Analysis	Every 1,500 tons
Construction	Low-Permeability Soil Atterberg Limits	Every 1,500 tons
Construction	Low-Permeability Soil Moisture-Density (compaction)	Every 1,500 tons
Construction	Low-Permeability Soil Nuclear Moisture Content	1 test per 200-foot grid per lift
Construction	Low-Permeability Soil Nuclear Density	1 test per 200-foot grid per lift
Construction	Vegetative Cover (topsoil) Maximum Particle Size	Every 7,500 tons
Construction	Vegetative Cover (topsoil) Organic Content	Every 7,500 tons
Construction	Vegetative Cover (topsoil) pH Testing	Every 7,500 tons
Construction	Low Permeability Soil Placement – 6-inch loose lifts	Daily during placement

Table 7-1. Construction Monitoring Tests and Observations by Task

Old American Zinc Superfund Site Fairmont City, St. Clair County, Illinois

Task	Monitoring Test / Observation	Frequency
Construction	Vegetative Cover (topsoil) Placement – 6-inch single compacted lift	Daily during placement
Transportation and Disposal	Monitor trucks loading	During shipment
	Monitor truck weights to verify not overweight	

ASTM = ASTM International

SECTION 8

Submittal Review and Approval

Either the QC manager or the subcontractor will generate construction QC submittals during or immediately before construction to demonstrate compliance with the project plans. Submittal requirements for projects are tabulated in the Submittal Register (Attachment 1), in accordance with the requirements identified in the project plans.

The QC manager will log and track all submittals on the Submittal Register. Specific responsibilities regarding submittals include:

- Coordinating all submittal actions
- Maintaining necessary submittal records in an organized manner
- Maintaining and tracking submittals in the Submittal Register
- Reviewing and certifying all submittals for compliance with the project plans, drawings, and specifications
- Approving all submittals, except those designated to be approved by the technical lead (project plan's lead engineer), EPA, or stakeholders
- Checking all material and equipment delivered to the project for compliance with the project plans, drawings, and specifications

Certain designated submittals require approval by authorities other than the QC manager (such as the project manager, technical lead, or others). In such cases, the QC manager will forward the submittal to the project manager or project engineer, who then will route the submittal to the appropriate approver.

The construction manager and QC manager are responsible for coordinating the submittal relegation and approval process and for ensuring the process does not impact the project schedule.

8.1 Submittal Review and Control

The contractor will control and schedule all submittals and document the process in the Submittal Register. The QC manager is responsible for updating the Submittal Register at least weekly and for forwarding a copy of it to the project manager and program QA/QC manager at the end of each month. Each submittal will be routed on a standard submittal form. Units of weights and measures used on all submittals will be consistent with those used in the project documents.

Each submittal will be reviewed for completeness and compliance with contract requirements by the appropriate qualified individuals. The submittal reviewers and approvers will be designated before construction.

Before each submittal, the QC manager will certify that the submittal complies with the project requirements. Submittals that do not comply with the requirements will be returned to the originator for correction and resubmittal. Substitutions or variations of specified requirements will be clearly noted. Certification of the approved submittals will be indicated by signing or initialing and dating the submittal form by the QC manager. Submittals may include:

- Vendor design calculations, shop drawings, etc.
- Personnel qualifications (welding, etc.)
- Product data
- Permits

- Samples
- Catalog cuts/pages
- Production, inspection, and test reports
- Material certifications
- Progress reports, safety reports, manpower reports, etc.
- As-built or certified data
- Operation and maintenance manuals
- QC records and certifications
- Sample and test results
- QC reports
- Construction photographs
- Contract closeout documents
- Completed hazardous waste manifests and disposal certificates

8.2 EPA and Stakeholder Approval of Submittals

Any submittal that requires EPA approval should be clearly indicated in the technical sections of the specification or the drawings. Submittals for items that are critical or complex, or are considered an extension of the work plan, should be submitted to EPA for approval. The submittals still require review for conformance and certification by the QC manager. This includes instances when the approver requires knowledge of the design assumptions and calculations.

As project-specific tasks are identified, the Submittal Register will be amended to include documentation requirements for those tasks.

SECTION 9

Change Control

Changes to final designs and project plans, field changes, or any other modifications are subject to design verification measures commensurate with those applied to the implementation work plan and draft project plans. The project manager will approve work plan changes in consultation with the technical lead/lead engineer.

RFIs will be used to communicate and document clarifications and modifications requested by the subcontractor. The RFIs will be tracked and logged by the QC manager so each RFI is fully addressed and that changes to the plans, drawings, and specifications are completely and accurately documented.

9.1 Construction Changes

Changes to materials, supplies, work approaches, and corrective action area designs during the construction effort will be documented in an overall effort to support sound engineering judgment and cost-effective project delivery. Changes during construction will be documented using the RFI process.

Changes to construction drawings as a result of an RFI will be identified with a symbol in the border identifying the RFI identification number and title. The drawing also should be marked with a cloud or circle to distinguish the change from the original drawings. The sheet will then supersede the existing drawing in the drawing set.

Note that the RFI process is a field construction tool for documenting changed field conditions or other issues that may require a deviation from project requirements identified in the drawings and specifications of the project plans. The RFI is intended to obtain input and concurrence from the lead engineer responsible for developing the project plans. Approval of the RFI by the lead engineer does not constitute approval for the contractor or its subcontractors to perform work outside the project scope or budget. If an issue identified in the RFI requires a change to the project scope, schedule, or budget, it should be clearly conveyed in the RFI. In such instances, it is the responsibility of the project manager to work closely with the KA to seek and obtain proper approval from the EPA project manager and Contracting Officer (in accordance with established contract procedures) before implementing the change recommended in the RFI. All proposed changes will be reviewed and approved by EPA before finalizing any change.

SECTION 10

Noncompliance and Corrective Actions

The QC manager will notify the subcontractor of any detected noncompliance with the foregoing requirements. The subcontractor will take immediate corrective action after receipt of such notice. Such notification, when delivered to the subcontractor at the work site, will be deemed sufficient. If the subcontractor fails or refuses to comply promptly, the QC manager may issue an order stopping all or part of the work until satisfactory corrective action has been taken. Noncompliance notification or stop work orders will be documented in the daily report. Completion of corrective action will be noted on the daily report. Verification of the corrective action and its results will be performed by the QC manager and documented in the daily report.

10.1 Corrective Action Plan

Resolution of failing test results or noncompliance reports will be completed through a corrective action plan. The corrective action plan will be developed and documented by the QC manager in conjunction with the project manager. The agreed-upon corrective action plan will be implemented and documented by the QC manager. Completion of the corrective action plan is the responsibility of the QC manager.

SECTION 11

Quality Control Documentation

11.1 Daily Report

The daily report is an essential tool for recording and reporting daily production, safety, and QC activities of the project. The daily report is the daily record of operations on the job site and must be kept current. These reports are the official record of work performance and compliance with project plans, drawings, and specifications. It is therefore critical that the reports are accurate and timely.

The QC manager is responsible for preparing daily reports and submitting them weekly to the project manager and program QA/QC manager. The QA/QC manager will obtain operational information from the construction manager (as well as any other contractor field personnel). The health and safety officer will provide information on all health and safety activities. The report also will include reports from each subcontractor working on the site, which will address, but is not limited to, the following:

- Quality aspects of the project being performed by the subcontractor
- Scheduling and resource issues
- Site safety inspections and concerns
- Environmental concerns
- Job progress
- Control inspections
- Tests performed and their results
- Crafts, personnel, and equipment onsite
- Material received

The project team must review the daily reports for accuracy and completeness because they are often used to prepare the final reports for the project. The project manager should review these reports and ensure the QC process is working effectively on the project. In addition, the program QA/QC manager should review these reports and ensure the QA/QC processes and systems are working effectively on the program.

Attachment 1 contains the daily report template. The following items should be attached to the daily reports:

- Tailgate safety meeting minutes and signatures
- Project status meeting minutes
- Submittals
- Testing plan and log
- Permits
- Chain-of-custody records
- Waste disposal documentation

Implementation of the QAP will be documented and reported to EPA using a series of reports, submittals, and deliverables. Table 11-1 lists the deliverables, the parties responsible for preparing them, submission frequency, and relative content.

Table 11-1. Reporting and Field Documentation Required

Old American Zinc Superfund Site Fairmont City, St. Clair County, Illinois

Report or Documentation Requirement	Completed By	Delivered To	Frequency	Report Description
Daily Report	Construction manager/site supervisor and/or QC manager	Project manager	Daily to QA/QC manager weekly.	Documents daily construction and QC activity. A Daily Report Template is in Attachment 1.
Weekly Update Report	Project Manager	EPA Work Assignment Manager	Weekly.	Presents a list of activities completed, any problems encountered, and the next week's activities.
Testing Plan and Log	QC manager	Project manager	As performed; attached to the last daily report submitted for each reporting period to QA/QC manager weekly.	Summarizes all testing activity conducted for the reporting period with test results (pass/fail). A Testing Plan and Log Template is in Attachment 1.
Project Status Meeting Minutes	QC manager	Project manager	Attached to the appropriate daily report to QA/QC manager weekly.	Minutes of any project status meeting held. A meeting minutes template is in Attachment 1.
Rework Items List	QC manager	Project manager	Monthly; attached to the last daily report submitted for each reporting period. To QA/QC manager monthly.	Documents rework items not corrected on same day as discovery. Includes items identified by both contractor and EPA or stakeholder(s). A Rework Items List Template is in Attachment 1.
Submittal Register	QC manager	Project manager	Maintained through the life of the work assignment. To QA/QC manager monthly.	A part of each work assignment's construction quality plan; Specific to the construction activity for that contract task order. A Submittal Register template is in Attachment 1.
As-Built Records	QC manager	Project manager, EPA	Maintained in field through life of each work assignment; ensure to be complete and accurate by field engineer/QC manager upon completion of work assignment activities, included in the final report.	Requirements specified in each work assignment's construction quality plan; to be maintained at job site and inspected by QC manager to ensure daily maintenance.
Photographic Record	QC manager	Project manager	Maintained in field through the life of the work assignment.	Photographic record showing construction progress, special situations. A photograph log template is in Attachment 1.
RFIs	QC manager	Project manager, lead engineer	As required.	Standard form. Generated in the field; routed to the office for approval. Log maintained in the field. An RFI form is in Attachment 1.
Transportation and Disposal Log	QC manager	EPA Program Waste Coordinator and QA/QC manager	Monthly and maintained in field through the life of the work assignment.	Tracks waste on the project from generation to final disposition. A template of the waste tracking log is in Attachment 1.

Documentation generated by the QC system must be maintained in an orderly fashion. It is suggested that the QC manager provide a series of three-ring binders for ready reference. This information should be arranged by specification section and tabbed to include the following major milestone inspections and items:

- Punch list inspections
- Prefinal and final inspection results
- Rework items lists
- Test results
- Contract modifications and RFIs arranged in numerical order
- Noncompliance notices and corrective actions

11.2 Field Documentation Operating Procedures

The objective of the field documentation operating procedures is to ensure appropriate project information is documented in logbooks during construction. This documentation is important for communicating activities with other staff members, EPA, and site personnel.

QC observations, inspections, and records of general QC activities on a regular basis will be documented as follows:

- Record daily progress and associated QA/QC sampling
- Record construction operations, sequence, staging, etc.
- Maintain waste disposal records
- Describe deviations from expected conditions, or unexpected problems and their resolution

11.3 Site Preparation

Site preparation will be performed by the subcontractor and observed by the QC manager with the following checks:

- Verify that equipment delivered to the site is the equipment specified.
- Confirm that a clearance check is performed to locate and identify each pipeline for all known utilities.
- Monitor the condition of the access roads. Verify that the proper signs are installed, the roads are maintained, and the road can accommodate construction traffic.
- Observe arrival and testing of materials to be installed as they are delivered onsite.
- Inspect all delivered materials to verify there are no defects in workmanship.
- Monitor delivery, handling, and storage of materials per the specifications.
- Verify storage facilities are protective and secure to prevent damage to equipment and materials per specifications.
- Review manufacturer material certifications.

11.4 Field Logbook

The QC manager will maintain a record of daily QC activities during construction in a field logbook. The field logbook will be available upon request for review. As an operating procedure for logbook entries, the following items will be recorded, at a minimum:

- Date, project name, and location
- Time work begins every day
- Summary of weather conditions
- General description of work activities, size of work crew, and the equipment and personnel onsite
- Duration of lunch break
- Start time and duration of downtime resulting from equipment breakdown, weather, or plant emergencies, etc.
- Summaries of QC meetings and actions recommended to be performed
- QC testing of equipment and personnel
- Identification of work locations
- Description of materials delivered to the site, including QC data provided by the suppliers
- Record of decisions made regarding defective work or corrective actions implemented, or both
- Field tests
- Sampling activities

The QC manager will sign or initial the bottom of each page of the field log and date the entry to show that notes are being taken daily. A line-through will be placed on any portion of a log book page that is unused. In addition, the same information will be documented in the daily report.

SECTION 12

Schedule

A detailed project schedule will be prepared and updated monthly as part of the contract. The schedule will be submitted with the monthly invoice until the period of performance for the contract is reached.

SECTION 13

Glossary

Construction Quality Management Manual describes the quality systems and processes that are required to be implemented on contracts and projects executed by construction operations, including on design/build and at-risk construction projects. The quality systems and processes have been put into place to manage the risks and liabilities of the company, ensure the quality and consistency of construction projects executed, and provide our clients with products and services that meet or exceed their expectations at an acceptable cost and within budget.

Construction Quality Assurance/Quality Control Plan (QAP) establishes the guidelines and requirements to be used for project delivery to meet client objectives and achieve CH2M standards. The primary objective of the QAP is to document requirements, procedures, and methodology for QA/QC during construction of each project. (Reference SOP: ES-P2-03)

Quality Assurance (QA) refers to the overall quality process. It is the assurance that the construction effort is conducted in a manner consistent with the design.

Quality Control (QC) refers to a planned system for monitoring, controlling and documenting the quality of materials, supplies, and workmanship in a manner consistent with the execution plan and the drawings and specifications. These are the active tasks associated with quality management.

Project Instructions provide management instructions for construction operations, documentation, and reporting for work to be performed. The instructions provide guidance to the project team and clarify project manager expectations regarding personnel assignments, responsibilities, accountability, project goals, direction, processes, and procedures through the construction phase of the project. The project instructions define parameters for the implementation of the Project Quality Management Plan. (Reference SOP: ES-P2-02)

Contract-required submittals such as project plans, including work plans, HASPs, design drawings and specifications, reports, and as-built records, will be clearly identified during the proposal phase of the project. Contract-required submittals are items that are submitted to the customer and stakeholders for review and approval prior to and following construction activities.

Construction quality submittals are those submittals generated during or immediately before construction to demonstrate compliance with the project plans, drawings, and specifications. Construction quality submittals include daily reports, shop drawings, schedules, sample documentation, calibration records, photographs, product data, samples, field change request documentation, administrative and closeout submittals, and additional technical support data presented for review and approval.

Attachment 1
Construction Quality Assurance Plan Forms

SUBMITTAL REGISTER

Project:	Old American Zinc Plant Superfund Site		Work Assignment No:	WA# 224-RDRD-B5A1	Activity / Task:	Facility Area Remedial Design					
Item No.	Description of Submittal	Reference: Spec / Drawing	Approving Requirement: Approval (A) or Information (I)	Approving Authority: (CH or Contracting Officer or Rep)	Submittal Frequency: (One time, weekly, etc.)	Date Submitted to Approver	Approving Authority Name	Title / Company or Agency	Status: -Approved -Rejected	Date Approved	Remarks
1	Operations Plan (as described in Section 01 11 00 Summary of Work)										
1A	Stormwater Pollution Prevention Plan, which will include a soil erosion and sedimentation control plan										
1B	Excavation Plan										
1C	Dewatering Plan										
1D	Restoration Plan (if required by Section 02 24 00, Delineation of Wetlands and Other Waters of the United States)										
1E	Performance Standard Verification Plan										
1F	Field Sampling Plan										
2	Health and Safety Plan										
3	Quality Control Plan										
4	Institutional Controls and Implementation Plan Updates										
5	Environmental Protection Plan										
6	Quality Assurance Project Plan (QAPP)										
7	Waste/Hazardous Waste Management Plan										
8	Request to Work Outside Regular Hours										
9	Utilities Outage Request										
10	Permits										
11	Laboratory Certification/Accreditation										
12	MSDS Sheets										
13	Contractor and Subcontractor Personnel List										
14	Original Waste Manifests										
15	Test Reports										
16	Testing Plan and Log										
17	QC Meeting Minutes										
18	QC Certifications										
19	Rework Items List										

SUBMITTAL REGISTER

Project:	Old American Zinc Plant Superfund Site		Work Assignment No:	WA# 224-RDRD-B5A1	Activity / Task:	Facility Area Remedial Design					
Item No.	Description of Submittal	Reference: Spec / Drawing	Approving Requirement: Approval (A) or Information (I)	Approving Authority: (CH or Contracting Officer or Rep)	Submittal Frequency: (One time, weekly, etc.)	Date Submitted to Approver	Approving Authority Name	Title / Company or Agency	Status: -Approved -Rejected	Date Approved	Remarks
20	Coordination and Mutual Understanding Meeting Minutes										
21	Photographic Records and Photo Log										
22	Material Specifications										
23	Subcontractor Field Notes										
24	Subcontractor Training and Experience Records										
25	As-Built Records										
26	Surface Water Monitoring and Groundwater Monitoring Plan										
27	Updated Operations and Maintenance Plan										
28	Project Completion Report / Closure Report										
29	Daily Reports										

Testing Plan and Log

		WA No.:		WA Title:				Location:		
A	B	CTO No.:	D	E	F	G	H	I	J	K
Spec Section and Paragraph	Test Required	Proposed Lab	Sampled By	Tested By	Test Location	Frequency	Date Test Made	Test Results	Date Results Forwarded	Remarks

ch2m SM

REQUEST FOR INFORMATION

Project Name/Description:	RFI No.:		Date Submitted:
Contract/TO No:	Project No:		
To: Name		Title	
From: Name		Title	

REFERENCES

Document *(Work Plan, Scope of Work, etc.)*:	
Drawing(s)/Specification *(Drawing No, Specification No., etc.*):	
Detail/Section *(Page No., Section No., Paragraph No., etc.)*:	
Discipline *(Architecture, Electrical, Mechanical, Chemical, Hydrogeology, etc.):*	

POTENTIAL IMPACT: Cost ☐ Schedule ☐ Activity/Task Impacted:

REQUEST	
Requested By: *(Name/Company/Title)*	Response Requested by Date:
REPLY:	
Responded By: *(Name/Company/Title)*	Date of Response:
RESPONSE DISPOSITION/ CONCURRENCE:	
Response Dispositioned / Concurred With By: *(Name/Company/Title)*	Date Response Dispositioned Concurred With:

FURTHER ACTIONS REQUIRED:

REVIEW DISTRIBUTION			**FINAL DISTRIBUTION**		
☐ CH2M HILL PM	☐	☐	☐ CH2M HILL PM	☐	☐
☐ CH2M HILL CM	☐	☐	☐ CH2M HILL CM	☐	☐
☐ CH2M HILL QC	☐	☐ Project Files	☐ CH2M HILL QC	☐	☐ Project Files

DAILY REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

CONTRACT NAME:		REPORT NO:	
CONTRACT NUMBER:		REPORT DATE:	
REVISION NUMBER:		REVISION DATE:	
TASK ORDER NUMBER:		PROJECT NAME / LOCATION:	
PROJECT NUMBER:		PROJECT DESCRIPTION:	
PROJECT MANAGER:		FIELD QUALITY MANAGER:	
CONSTRUCTION MANAGER:		SITE SAFETY MANAGER:	

AM WEATHER:		PM WEATHER:		MAX TEMP (F):		MIN TEMP (F):	

SUMMARY OF WORK PERFORMED TODAY

HEALTH AND SAFETY REPORT

SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED (Include Observations, Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted:

TAILGATE TOPICS:

SAFE BEHAVIOR OBSERVATIONS:

OPERATIONS / PRODUCTION REPORT

WORK FORCE – CONTRACTOR AND SUBCONTRACTOR

Company	Cumulative Total of Work Hours From Previous Report	Total Hours Today	Total Work Hours From Start of Construction
CH2MHILL			

EQUIPMENT ON HAND

Description of Equipment	Make/Model/Manufacturer	Equipment ID Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

WORK AND/OR TESTS ACCOMPLISHED OR IN PROGRESS

Performed Work / Test for Today:

Planned Work / Test for Tomorrow:

Planned Work / Test for Next Week:

CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the project [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.)**:**

VISITORS AND DISCUSSIONS:

QUALITY CONTROL REPORT

MATERIALS DELIVERED TO JOB SITE

Quantity/Volume/ Weight	Description of Materials Received	Make/Model/Manufacturer	Material Lot Number	Inspection Performed By

COMMENTS (acceptance status, inspection findings, etc.):

INSPECTIONS PERFORMED

Task/Activity Inspected	Inspection Performed	Findings

TESTS PERFORMED

Task/Activity Tested	Test Performed	Test Results (Pass/Fail) - Criteria

QUALITY ISSUES AND RESOLUTIONS:

SUBMITTALS INSPECTION / REVIEW

Submittal No.	Submittal Description	Specification/Plan Reference	Submittal Approved?		Comment/Reason/Action
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	
			Yes ☐	No ☐	

REGULATORY COMPLIANCE REPORT

PERMIT INSPECTIONS PERFORMED:

WASTE ACCUMULATION/STOCKPILE AREA INSPECTION

Inspection Performed By:		Signature of Inspector:	
Accumulation / Stockpile Area Inspected:			

No of Containers:		No of Tanks		No of Roll-Off Boxes:		No. of Drums	

Inspection Results:

GENERAL COMMENTS

General Comments~ (rework, directives, etc.):

ATTACHMENTS

List of Attachments: (examples, as applicable: submittals, meeting minutes, safety meeting minutes, COCs, weight tickets, manifests, profiles, rework item list, RFIs, DCNs, photographs, etc.):

NOTE: Write all entries legibly in ink. Line out all unused portions or designate as "not applicable". Preparer signs first and last name on each completed daily report. This form may be filled out electronically and signed electronically.

PREPARER'S SIGNATURE DATE

PHOTOGRAPHS	

Subject/Description: Photo Log No:	
Subject/Description: Photo Log No:	
Subject/Description: Photo Log No:	
Subject/Description: Photo Log No:	
Subject/Description: Photo Log No:	
Subject/Description: Photo Log No:	
Subject/Description: Photo Log No:	
Subject/Description: Photo Log No:	

Photograph Log

Project Number	Project Name	Site	Film Cassette Number	Photo Number	Date	Time	Task and Description	View Direction	Taken By

ES-P6-05A Transportation and Disposal Tracking Log

Version: 001, 10/01/09

Project Name:
Date:

Project Number	Task Order Number	Task Order Name	Site/Task Description	Container Type	Container Desig./No.	Accumula-tion Start Date	Waste Profile No. and/or Sample ID	(Sub)Con-tractor	Trans-porter	Date Trans-ported	Trans-porter DOT # & EPA ID	Disposal Facility	Disp Fac State ID &/or EPA ID	Matrix	Waste Type (Haz, Nonhaz, TSCA)	Waste Code (RCRA then State)	Disposal Facility Date (found on final manifest)	Manifest Number	Disposal Method (Enter disposal quantity under appropriate method)							Cert. of Disp/ Destruc Date	Comments/ Notes
																			Incin-eration	Landfill	Recycle	Onsite	Offsite Water Treatment	Other	Unit		

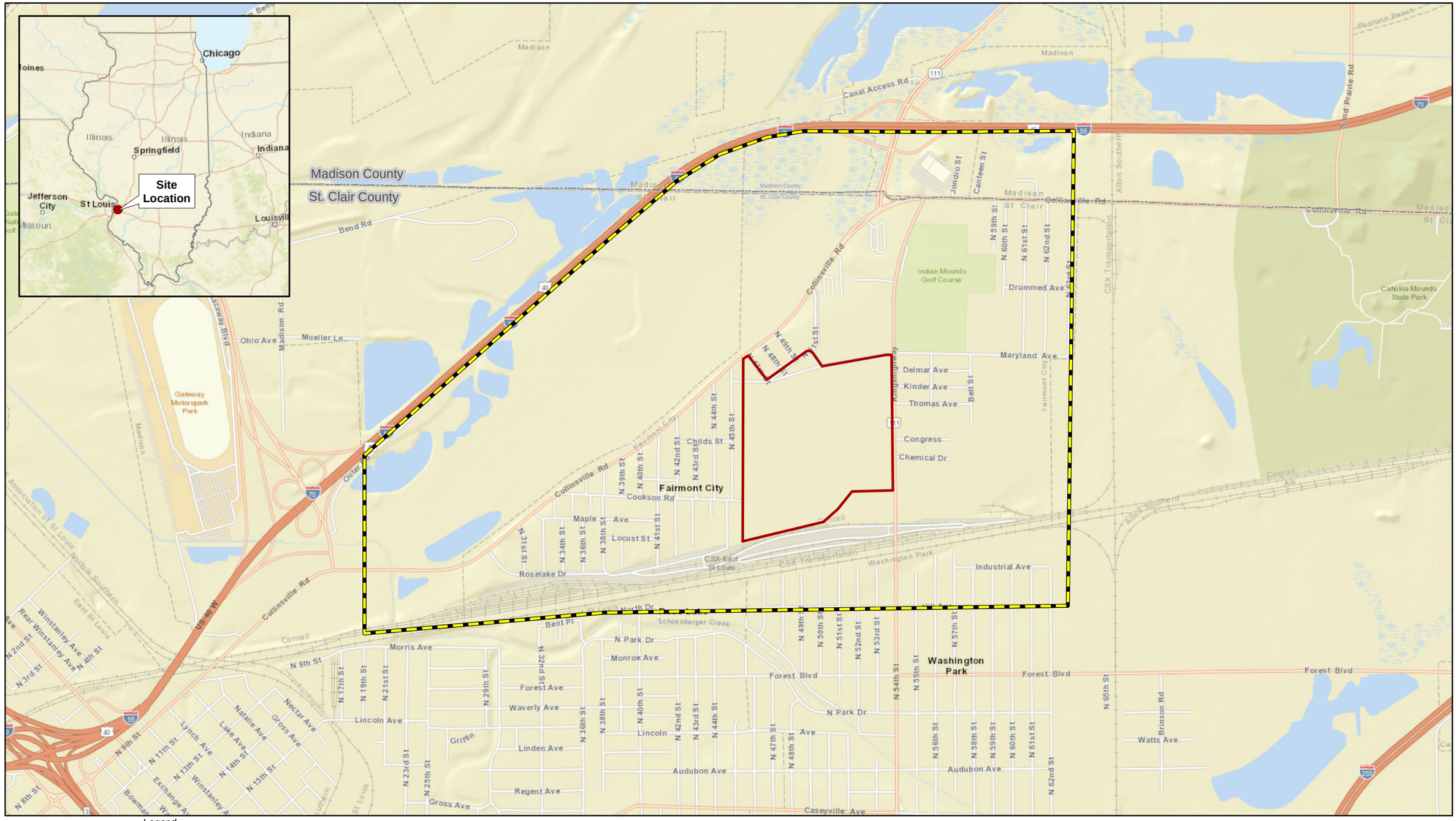
Column A - List CH2M HILL assigned project number
Column B - List Task Order number (if applicable)
Column C - Base or project name
Column D - List name of specific task or site (UST #35 or SWMU 68)
Column E - List type of container waste is placed (drum, rolloff, frac tank, stockpile, etc.
Column F - List number assigned to container
Column G - Date first drop/grain, etc. of waste placed into container/stockpile
Column H - Sample ID and/or profile number representing waste stream
Column I - Name of subcontractor handling T&D (lower tier sub)
Column J - Name of transporter removing waste from site
Column K - Date waste transported/removed from site
Column L - List transporter's DOT # and/or EPA ID # (EPA ID# only required for hazardous waste)
Column M - List name of disposal facility - list both intermediate and final facility name
Column N - List state ID # and/or EPA ID # (EPA ID# only required for hazardous waste). Note: list #'s for both intermediate and final facilit
Column O - List matrix of waste (soil, water, concrete, etc.)
Column P - Is waste hazardous, non-hazardous, petroleum contaminated, TSCA-regulated, etc.?
Column Q - List hazardous waste code(s) (D008, U228, etc.). RCRA then State as applicable
Column R - Date received by disposal facility (date found at bottom of final facility-signed manifest
Column S - List number of manifest used for waste tracking (top/left or middle of manifest
Column T through Y - Insert ACTUAL quantity from weight ticket or other quantity document in column associated with disposa
Column W - List quantities here if taken to DRMO, base POTW, on-site treatment, etc. Please specify where in Comments column
Column Z - Insert units applicable to waste; weight for solids, volumes for liquids
Column AA - Date of disposal, destruction or recycle per the Certificate of Disposal/Destruction/Recycle (CD). If not specified, may put date of actual CI
Column AB - Include any pertinent information not already listed

Note: All waste should be included on the Waste Tracking Log from the moment of generation.

Rework Items List

PUNCH LIST (REWORK ITEMS LIST)

PROJECT NAME:			PROJECT NUMBER					
Item No	Date Identified	Description	Referenced Spec or Drawing	Date Subcontractor Notified	Proposed Date of Action Completion	Action Performed	Resolution	Date Completed
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								



Notes:
1. Basemap provided by ArcGIS Online World Street Map.

Figure 1-1
Site Location Map
Old American Zinc Plant Superfund Site
Fairmont City, Illinois

Appendix E
Long-Term Maintenance Plan

LONG-TERM MAINTENANCE PLAN

Old American Zinc Plant Superfund Site
Fairmont City, Illinois
WA No. 224-RDRD-B5A1/Contract No. EP-S5-06-01

Prepared for

February 2019

ch2m

Contents

Acronyms and Abbreviations

bgs	below ground surface
EPA	U.S. Environmental Protection Agency
FA	Facility Area
FS	feasibility study
IAC	Illinois Administrative Code
LTM	long-term maintenance
OAZ	Old American Zinc
PRP	potentially responsible party
RD	remedial design
RI	remedial investigation
TCRA	time-critical removal action
XTRA	XTRA Intermodal, Inc.

SECTION 1

Introduction

This long-term maintenance (LTM) plan defines the activities required as part of the selected remedy for the Facility Area (FA) Remedial Design (RD) at the Old American Zinc (OAZ) Plant Superfund Site in Fairmont City, Illinois. LTM begins once construction is complete, defined by the U.S. Environmental Protection Agency (EPA) as "all components of the final remedy are in place and operating as designed." This LTM plan may be updated following implementation of LTM (for example, during the 5-year reviews) to incorporate changes in LTM requirements. LTM activities at the site include cover maintenance and maintaining institutional controls.

SECTION 2

Site Characteristics

This section summarizes the site history, regulatory history, and physical setting based on the information presented in the remedial investigation (RI) report (ENTACT 2009) and the feasibility study (FS) (ENTACT 2012).

2.1 Site Background and History

The OAZ Superfund Site is in the village of Fairmont City in St. Clair County, Illinois. The FA is bordered on the west by Garcia Trucking and North 45th Street, on the north by Maryland Avenue, on the east by General Chemicals and Kingshighway, and on the south by the CSX Intermodal railroad yard.

OAZ conducted zinc-smelting operations at the site from 1916 to 1967. Slag from the smelting operation was cooled by placing the molten material along the northern and western boundary of the FA. The slag stockpiles originally encompassed an area of 15 acres. In 1979, XTRA Intermodal, Inc. (XTRA) purchased the site, including the clinker and other smelting residues on the property. XTRA operated a trucking terminal at the site until 2003 that included lease, storage, and maintenance of a diverse fleet of trailers. XTRA ground and redistributed the slag stockpiles on the FA to build up and level the former plant site to facilitate its trucking operation. Before remedial action, redistributed slag on the FA covered an area of 125 acres, with thicknesses ranging from 6 inches to 9 feet (ENTACT 2012).

2.2 Regulatory History

The information in the following paragraphs regarding the regulatory history of the site is summarized primarily from the RI report (ENTACT 2009) and FS (ENTACT 2012).

Site investigations conducted at the site since 1994 detail the nature and extent of contamination in the FA and surrounding properties. ENTACT completed an RI and FS for the site in 2012 and identified contaminants in different media that included slag stockpiles, ground slag that was used as fill material, and high metal concentrations in shallow groundwater in the FA. The impacted surrounding areas include residential, commercial, and vacant properties and village alleyways and drainageways that were contaminated with runoff from the facility. Ground slag also was transported to offsite properties by local businesses, residents, and the Village for surfacing village alleyways and used as fill material in residential properties (ENTACT 2012). Most of the impacted properties are west of the site, with small pockets of trailer park and residential developments to the north, south, and east.

EPA, under the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act, conducted a time-critical removal action (TCRA) from 2002 to 2003. During the TCRA, 462 offsite properties were sampled, of which 209 properties were found to have lead concentrations above the remedial action level of 400 parts per million. Impacted soil was removed from 152 properties, with the remaining properties to be addressed under future remedial action.

Following the completion of the RI/FS in 2012, EPA issued a Record of Decision detailing the selected remedial approach for the site (EPA 2012). EPA entered into an Administrative Order on Consent with the potentially responsible party (PRP) in August 2014 to perform the RD work. The PRP was tasked with performing the RD work, and a draft final RD report (consisting of the report, selected drawings, but no technical specifications) was submitted to EPA in April 2016 (ARCADIS 2016). In April 2016, the PRP filed for Chapter 11 bankruptcy and ceased performing additional work at the site. As a result, EPA took control of the site to complete the RD.

2.2.1 Existing Site Topography and Surface Water Drainage

2.2.1.1 Existing Site Topography

The site is fully grassed with the Consolidation Area in the southwestern portion of the site. Grassed drainage channels are present throughout the site to convey stormwater away from the Consolidation Area and toward the south and west to drain to existing channels. Several buildings are on the eastern edge of the FA. The habitat onsite is predominantly grassland and scrub. Ground elevation within the site is predominately flat, with elevations ranging between 400 and 420 feet above mean sea level.

2.2.1.2 Surface Water Drainage

Surface water runoff from the FA is transported through a series of drainage ditches and Rose Creek, and ultimately flows to the Old Cahokia Watershed. Discharge to the watershed is made at two distinct points, referenced as the West Ditch Outfall and the Rose Creek Outfall. The western portion of the watershed drains to Schoenberger Creek, a tributary to the Cahokia Canal. These drainage features and water bodies are discussed in the following paragraphs.

A set of four drainage ditches drain the FA—two in the eastern portion of the FA designated as East Ditch 1 and East Ditch 2, and two in the western portion of the FA designated as West Ditch 1 and West Ditch 2. These ditches are ephemeral and only flow in direct response to precipitation events. During dry periods, water in these ditches is contained in isolated pools. During the summer months, the water in these pools can get warm and stagnant.

Rose Creek is a shallow ephemeral stream that flows in a westerly direction past the southern edge of the FA. Before reaching the southern boundary of the FA, Rose Creek flows along the southern boundary of the General Chemical property, crossing beneath Kingshighway and along the southern boundary of the Cargill property. East Ditch 1 joins with Rose Creek near the southeastern corner of the FA. From this point, Rose Creek flows westerly along the southern boundary of the FA, where West Ditch 2 joins the creek. Rose Creek continues in a general westerly direction approximately 4,000 feet along the northern side of the CSX International railroad corridor, to a point approximately 600 feet from Collinsville Road, where it bends to the northwest. Beyond this bend, Rose Creek flows in a northwesterly direction for approximately 800 feet, where it is conveyed via a culvert beneath Collinsville Road. North of Collinsville Road, the creek discharges into the Old Cahokia Watershed at the Rose Creek Outfall, approximately 0.75 mile west of the western boundary of the FA.

Like the ditches draining the FA, Rose Creek only flows in direct response to precipitation events. The 4,000-foot segment of the creek between the FA and Collinsville Road is typically dry, with isolated small pools of water. During the drier portions of the year, water in the pools becomes stagnant.

2.2.2 Soil and Geology

The site geology generally consists of unconsolidated interfingering horizons of clays, silts, and fine-grained sands until depths of approximately 70 feet below ground surface (bgs), where the deposits become fine-grained sand grading with depth to medium- to coarse-grained sand with sand and gravel horizons. The upper 50 feet beneath the FA appears to be associated with the Cahokia alluvium, which is described as consisting of poorly sorted silt, clay, and silty sand with localized lenses of sand and gravel that varies considerably in thickness but rarely exceeds 50 feet bgs (Willman et al. 1975). The Cahokia alluvium overlies a glacial outwash formation associated with the Henry Formation and is composed primarily of fine- to coarse-grained sand grading to sand and gravel deposits (Illinois Department of Public Health 1998). The unconsolidated deposits near the site extend to depths of 90 to 120 feet, where a Mississippian-aged claystone, shale, limestone, and dolomite bedrock is encountered.

The Consolidation Area is filled with a compacted mixture of black, dry, dense, ground slag/slag-like granular fill and demolition-type materials (for example, bricks, gravel, concrete, wood, etc.) from demolition of the former smelter facilities.

2.2.3 Site Groundwater

Groundwater is encountered in the shallow Cahokia alluvium, the deeper and more extensive Henry Formation Outwash, and the underlying bedrock. Based on limited yield and abundance of fines, the shallow Cahokia alluvium deposits are not used for potable purposes in the site area as determined by well survey results. The major aquifers in the area are the Henry Formation Outwash and gravel outwash aquifer encountered between 75 and 90 feet bgs, and the Valmeyer Bedrock Formation encountered at depths greater than 120 feet near the site.

The uppermost shallow saturated horizon was encountered between 15 and 18 feet bgs within a silty sand (SM) horizon or fine well-sorted sand with some silt (SP-SM) horizon. Based on the FA borings advanced during the RI, groundwater is initially encountered between 13 and 20.5 feet bgs in thin horizons of silt, sandy silt, silty sand, sand, and clayey sand deposits associated with the Cahokia alluvium (ENTACT 2009). Based on FA boring logs installed as part of the RI, these interfingering silty to fine-grained sand, silt, and clay layers extend to a depth of 74 feet, where the deep borings terminated (ENTACT 2009).

The quarterly groundwater elevations from the wells collected across the FA (except MW-03) were used to determine groundwater flow direction across the FA. The groundwater flow direction in the shallow unconfined horizon is predominantly west to northwesterly across the FA, with slight seasonal variations.

Hydraulic conductivity within the groundwater-bearing zones was determined by performing in situ aquifer (slug) tests on monitoring wells. Conductivity values at the site range from 0.0108 to 0.212 foot per day. These values are within the literature-based typical hydraulic conductivity range for silt and silty sand as presented in *Groundwater* (Freeze and Cherry 1979).

SECTION 3

Long-Term Maintenance

LTM generally will consist of monitoring, inspections, maintenance, and maintaining institutional controls. General procedures for monitoring and inspections described herein are intended to guide personnel performing LTM activities. The guidelines will be modified as needed in the LTM plan to reflect actual LTM procedures.

3.1 Consolidation Area Inspection

Consolidation Area inspections will include inspecting for cover penetration or damage, erosion control, and vegetative stress. The inspections will occur quarterly for the first year following completion of the Consolidation Area cover, semiannually for the second year, and annually thereafter. Attachment 1 contains an example inspection checklist.

3.1.1 Cover Penetration or Damage

The Consolidation Area cover will be inspected to verify that no section has been penetrated or damaged due to settlement (including minor depressions in the consolidation area cover surface and significant grade changes over large parts of the consolidation area cover), cracking, burrowing animals, and vandalism. If the cover inspection occurs during or after a significant storm, areas of settlement requiring attention can be identified by areas of ponded or poorly draining stormwater.

3.1.2 Erosion Control

Temporary erosion controls established during site construction will not be removed until vegetation is established. Temporary controls will be inspected during LTM inspections to verify they are functioning as designed. The drainage channels and banks will be inspected to check that vegetation has not been damaged or washed away. If erosion has occurred, the channels or banks will be restored, which may include placement of sod, erosion control matting, or both. Channels and outlets will be inspected for soil deposition or stream erosion. Deposited sediment will be removed.

3.1.3 Vegetative Stress

The Consolidation Area cover will be inspected for vegetation stressed by lack of moisture (rainfall) and the generation of consolidation area leachate seeps. Seeps, if discovered, will be addressed case-by-case, depending on size and volume.

3.1.4 Reporting

An annual monitoring report will be prepared for inspection and maintenance conducted that year. The monitoring report will include a description of maintenance activities, inspections, necessary repairs, and institutional controls described in Section 3.3.

3.2 Consolidation Area Maintenance

Maintenance will include mowing and necessary maintenance and repairs recommended as a result of Consolidation Area inspection activities and results.

3.2.1 Cover Restrictions

Activities that may damage the integrity of the Consolidation Area cover are prohibited. This includes excavations and permanent storage of equipment on the Consolidation Area cover. Vehicular traffic will be limited only to that needed for LTM (light vehicle access). Mowing should not take place immediately following heavy rainfall, to avoid damaging the cover.

3.2.2 Grass Mowing

The grass on the Consolidation Area cover will be mowed (one-third of the area each year), so the entire area is mowed once every 3 years, which will inhibit growth of woody plant species.

3.2.3 Cover Defects

Defects in the consolidation area cover identified during inspections will be corrected as soon as possible.

3.2.4 Reporting

One annual monitoring report will be prepared each year for inspection and maintenance conducted that year. The monitoring report will cover grass mowing, inspections, necessary repairs, and institutional controls.

3.3 Institutional Controls

The remedial action for the FA includes the following institutional controls:

- Groundwater Management Zone per 35 Illinois Administrative Code (IAC) 620.250
- Soil Management Zone per 35 IAC 740.535
- Uniform Environmental Covenant per 765 Illinois Compiled Statutes 122
- Engineering controls for buildings and parking lots

Engineering controls will be inspected for deterioration or compromised surfaces once per year and after any flooding that occurs within the area of the engineering control.

At least once annually, the FA will be inspected to determine if use of the site is consistent with the institutional controls. The inspection results, along with maintenance and repairs, will be documented.

3.4 Groundwater and Stormwater Monitoring

Groundwater and stormwater monitoring will be performed to confirm that contaminants of concern are not migrating off the FA at concentrations exceeding upgradient concentrations. Sample locations will be selected after completion of the remedial action and detailed in a Surface Water and Groundwater Monitoring Plan.

3.5 Five-Year Performance Reviews

The National Oil and Hazardous Substances Pollution Contingency Plan requires 5-year site reviews, as long as hazardous substances remain at the site that do not allow unlimited use and unrestricted exposure. The purpose of the 5-year review is to evaluate the implementation and performance of the remedy to determine it is protective of human health and the environment. The 5-year review reports will evaluate the status of the remedial action, including monitoring frequency, duration of continued monitoring, condition of the consolidation area cover, status of inspections and maintenance, and effectiveness of institutional controls. The process will stimulate a review of the LTM program and document necessary modifications resulting from the review process. The first 5-year remedial performance review will occur in 2024, assuming the remedial action is implemented in 2019.

Five-year reports will address the following:

- Site description
- Remedy background
- Status of monitoring program
- Inspection results
- Effectiveness of institutional controls
- Stormwater and groundwater monitoring results
- Conclusions and recommendations

SECTION 4

References

ARCADIS. 2016. Draft Final Design Report, Remedial Design, Old American Zinc Plant Site, Fairmont City, Illinois. March.

ENTACT, LLC (ENTACT). 2009. *Final Remedial Investigation Report, Old American Zinc Plant Site, Fairmont City, Illinois.* March.

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Illinois Department of Public Health. 1998. *Health Consultation for Swift Agricultural Chemicals, St. Clair County, Fairmont City, Illinois*. April.

Freeze, R.A. and J.A Cherry. 1979. *Groundwater*. Englewood Cliffs, New Jersey: Prentice-Hall. TIC 217571.

U.S. Environmental Protection Agency (EPA). 2012. Record of Decision, Old American Zinc Plan Superfund Site, Fairmont City, Illinois. September.

Willman, H.B., et al. 1975. *Handbook of Illinois Stratigraphy, Illinois State Geological Survey: Bulletin 95*. Urbana, State of Illinois Department of Registration and Education.

Attachment 1
Consolidation Area Cover Inspection Form

OLD AMERICAN ZINC
CONSOLIDATION AREA COVER INSPECTION FORM

Inspection Date: **Inspector Name:**

Drainage Swales, Culverts, Access Roads	Yes	No	Comments & Deficiencies Noted (Required if Shaded Area Selected)	CA Completion (Date/Initials)
Are Drainage Swales in Good Condition?				
Are Access Roads in Good Condition?				
Are Culverts in Good Condition?				
Perimeter Security (Fences & Gates)	**Yes**	**No**	**Comments & Deficiencies Noted (Required if Shaded Area Selected)**	**CA Completion (Date/Initials)**
Are Security Signs in Place?				
Are all Gates Locked?				
Is Fence in Good Condition?				
Are there Signs of Vandalism?				
Is Vegetation growing on Fence or Gates?				
Area Cover	**Yes**	**No**	**Comments & Deficiencies Noted (Required if Shaded Area Selected)**	**CA Completion (Date/Initials)**
Are there Signs of Stressed or Dead Vegetation?				
Has the cell been mowed recently?				
Is there Woody Growth?				
Are there Signs of Erosion, Furrows, Ruts, Penetrations, Cracking or Animal Burrows?				
Are there any Areas of Ponding Water?				
Any evidence of vandalism to the Cover?				
Is there any Evidence of Slips?				
QUARTERLY INSPECTIONS				
Surface Water Conveyance	**Yes**	**No**	**Comments & Deficiencies Noted (Required if Shaded Area Selected)**	**CA Completion (Date/Initials)**
Are there Signs of Stressed or Dead Vegetation?				
Are there Signs of Erosion, Furrows, Ruts, or Animal Burrows?				
Are there Signs of Erosion or other Problems?				
Is there any accumulated Debris in channels?				
Is there any Buildup of Excess Sediments at the Culverts or Spillways?				

CA - Corrective Action

Appendix F
Engineer's Estimate of Construction Cost

Appendix F. Class 2 Estimate; +20% / -15%
Construction of Consolidation Area for Excavated Slag
Old American Zinc Plant Superfund Site
St. Clair County, Illinois

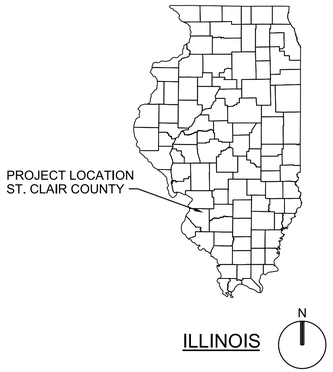
SCOPE: Slag and clay excavation from the Facility Area reclaimed by placing slag beneath low permeability cover, placing topsoil and landscaping

Item	Qty	Unit	Unit Price		Notes
Preconstruction Activities					
Implementation Plans/Submittals	1	LS	$ 50,000	$ 50,000	Work Plan/Schedule; H&S Plan; CQP; WMP; SWPPP and updates. Also includes equipment/material submittal preparation and revisions.
Post Design Support	1	LS	$ 556,300	$ 556,300	Review, Approve Submittals, RFIs, Meetings with subcontractors.
Preconstruction Meeting	1	LS	$ 5,075	$ 5,075	Preconstruction meeting with the Prime Contractor, primary subcontractors, and the client to discuss implementation plans, schedule, etc.
Construction Activities					
Mobilization/Site Setup	1	LS	$ 109,245	$ 109,245	Mobilize equipment and materials to site and prepare staging areas. Document existing condition of haul routes with photos and videos. Includes utility locates; Contractor monthly home office support, QC support, etc.
Survey	1	LS	$ 138,240	$ 138,240	Surveying services throughout the duration of the project, including initial site survey.
Cone Penetration Test (CPT)	1,090	FBGS	$ 120	$ 130,800	26 locations at 20 fbgs and 19 locations at 30 fbgs; includes labor for geotechnical engineer for oversight and sampling.
Temporary Facilities	15	MO	$ 5,589	$ 83,835	Monthly cost of temporary facilities, utilities, radios, phones, temp power that are needed throughout the duration of the field work.
Install/Maintain erosion controls	17,500	LF	$ 3.50	$ 61,295	Installation/maintenance/removal of silt fencing and other erosion controls throughout the project.
Clearing & Grubbing	125	ACRE	$ 5,269	$ 658,625	Entire Site; Light clearing and grubbing, stump and tree removal.
Air Monitoring	150	DY	$ 1,522	$ 229,000	Labor, equipment, and materials to conduct air monitoring at facility during construction. Personnel monitoring, continuous monitoring with status checks every 30 minutes, and periodic air sampling.
Stormwater Management	1	LS	$ 442,092	$ 442,092	SWPPP throughout construction.
Culvert Installation	96	FT	$ 260	$ 24,960	Installation of two 36" diameter, 48' long corrugated steel pipe culverts by construction entrance on west edge of Facility Area.
Culvert Installation	25	FT	$ 210	$ 5,250	Installation of one 24" diameter, 25' long corrugated steel pipe culvert under right of way on north eastern portion of Facility Area.
Wheel Wash Decon Pad	460	SF	$ 30	$ 13,800	12" Reinforced (#5, 50 bars 10LF each, 10 bars 50 LF each) concrete pad; includes washing equipment, piping, container.
Construction Entrance Stabilization	22,000	SF	$ 6.50	$ 143,000	8" Asphalt soil stabilization.
Double Swing Gate	4	EA	$ 1,839	$ 7,356	Each 6'H x 12'L; includes mechanism, joints, installation.
Double Sliding Gate	112	LF	$ 221	$ 24,752	6'H; 36', 40', 36' Openings; includes mechanism, joints, structural support, and installation.
Permanent Fencing	2,809	LF	$ 44	$ 123,596	6' Chain link; includes excavation, concrete, and joints.
Temporary Fencing	2,200	LF	$ 22	$ 48,400	6' Chain link; includes installation and demolition.
Decommissioning Wells	120	LF	$ 55	$ 6,600	4 wells, 30 fbgs each.
Well Installation	120	LF	$ 255	$ 30,600	2-in PVC wells, to 30-ft bgs. Includes mobe/demob; well completions, development, and protection. Also includes T&D of IDW.
Initial Well Monitoring	1	EA	$ 15,531	$ 15,531	Baseline well sampling upon installation. 2 days, 2 persons. Includes labor, equipment, material, and analytics.
Pulverizing Concrete Foundations	5,000	CY	$ 38	$ 190,000	Unknown amounts of concrete foundations could be encountered. Pulverized prior to being included in the stockpile. Assumed 5000CY.
Slag Removal Continuous Operation	780,900	CY	$ 4.00	$ 3,123,600	Including West Ditch 1 and Rose Creek (400CY).
Confirmation Sampling	271	EA	$ 305.00	$ 82,655.00	100' x 100' grid within the bottom of the excavation and for every 10LF of sidewall, includes analytical costs.
Clay Removal to Stockpile	375,900	CY	$ 5.57	$ 2,093,473	
Slag Haul and Place in Consolidation Area	780,900	CY	$ 4.54	$ 3,548,434	
Clay Haul and Place in Consolidation Area	375,900	CY	$ 6.43	$ 2,415,546	
Compact Clay	375,900	CY	$ 1.19	$ 445,606	Includes compaction testing.
Grade Site using Clay	125,300	SY	$ 0.50	$ 62,650	
Stockpile Management	330	DY	$ 2,805	$ 925,650	Stockpile management for duration of project.
Topsoil Layer	148,440	CY	$ 44	$ 6,531,360	Cost covers purchasing, hauling, placing, compacting, and grading 12-in layer topsoil on consolidation area & 6-in layer topsoil on remainder of site (non-consolidation area). Cost based on local vendor quotes.
Seed, Mulch, Erosion Matting	125	ACRE	$ 2,488	$ 311,000	Assumed hydroseeding.
Landscape Warranty	12%	of	$ 311,000	$ 37,320	12% of the Seed, Mulch, Erosion matting task.
Site Cleanup	1	LS	$ 24,736	$ 24,736	
Final Survey	1	LS	$ 15,097	$ 15,097	
Demobilization	1	LS	$ 50,127	$ 50,127	
Post-Construction Activities					
Non-Hazardous Waste T&D	300	TN	$ 45	$ 13,500	Construction related non-haz waste transport and disposal.
Long Term Groundwater and Surface water Monitoring	30	EA	$ 16,531	$ 495,929	Once per year for 30 years. $15,531 per 4 well samples. $250 per surface water sample with 4 surface water sample locations. 2 days, 2 persons. Includes labor, equipment, material, and analytics.
Long Term Maintenance	1	LS	$ 781,351	$ 781,351	O&M Activities include quarterly 1st year inspections, semiannual 2nd year inspections, annual inspections thereafter with respective reporting efforts, and 5-year reporting and review. Mowing every 3 years and other general inspections and repairs for maintaining cap integrity.
			Pre-Bond, Contingency:	$ 24,056,386	
Payment and Performance Bond	2.50%	of	$ 24,056,386	$ 601,410	
Contingency	15%	of	$ 24,056,386	$ 3,608,458	Unknowns include, but are not limited to, volume of concrete foundations to be processed; water management (culverts and drains, etc.).
			Subtotal:	$ 28,266,253	
Project Management/Construction Management					Per EPA guidance.
Project Management	5%	of	$ 28,266,253	$ 1,413,313	
Construction Management	6%	of	$ 28,266,253	$ 1,695,975	Covers labor, equipment, materials for 4-person team onsite throughout duration.
			Total Capital Cost:	$ 31,375,541	
CLASS 2 RANGE:			**20%**	$ 37,650,650	
			-15%	$ 26,669,210	

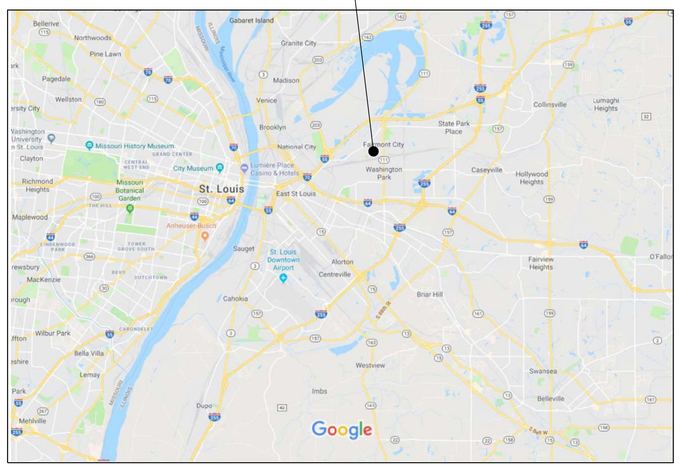
This construction cost estimate is not an offer for construction and/or project execution. The construction cost estimate for this Design is an Association for the Advancement of Cost Engineering (AACE) Class 2 estimate and is assumed to represent the actual total installed cost. The estimate above is considered control-level cost estimating, suitable for use in project budgeting and planning. This estimate has been prepared with partial design and engineering calculations. The level of accuracy for the class of estimate defines the upper and lower ranges of the cost estimate. It is based upon the level of design detail and uncertainty associate with that level of detail. For a Class 2 estimate, the accuracy range is +20% to -15%. It would appear prudent that internal budget allowances account for the highest cost indicated by this range as well as other site specific allowances. The cost estimate has been prepared for guidance in project evaluation and implementation from the information available at the time of the estimate. The final costs of the project will depend on actual labor and material costs, competitive market conditions, implementation schedule, and other variable factors. As a result, the final project costs will vary from the estimates presented herein. Because of this, project feasibility and funding needs must be carefully reviewed prior to making specific financial decisions to help ensure proper project evaluation and adequate funding.

Appendix G
Drawings

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS



PROJECT LOCATION
FAIRMONT CITY



VICINITY MAP
NTS
N

INDEX TO DRAWINGS

SHEET NO.	DRAWING NO.	TITLE
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2.	G-002	LEGEND AND GENERAL NOTES
3.	C-001	MAINTENANCE OF TRAFFIC
4.	C-002	PARCEL DATA SHEET
5.	C-101	FACILITIES AREA EXISTING CONDITIONS - NORTH
6.	C-102	FACILITIES AREA EXISTING CONDITIONS - SOUTH
7.	C-103	SLAG EXCAVATION - NORTH
8.	C-104	SLAG EXCAVATION - SOUTH
9.	C-105	CONSOLIDATION AREA CLAY REMOVAL
10.	C-106	CONSOLIDATION AREA CONSTRUCTION SLAG BACKFILL
11.	C-107	CONSOLIDATION AREA CONSTRUCTION CLAY COVER
12.	C-108	SITE SUBGRADE AND DRAINAGE - NORTH
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14.	C-201	SITE SUPPORT INITIAL - NORTH
15.	C-202	SITE SUPPORT INITIAL - SOUTH
16.	C-203	SITE SUPPORT INTERMEDIATE - NORTH
17.	C-204	SITE SUPPORT INTERMEDIATE - SOUTH
18.	C-205	SITE SUPPORT FINAL - NORTH
19.	C-206	SITE SUPPORT FINAL - SOUTH
20.	C-301	CONSOLIDATION AREA SECTIONS
21.	C-501	DETAILS - 01
22.	C-502	DETAILS - 02
23.	C-503	DETAILS - 03
24.	C-504	DETAILS - 04

PROJECT LOCATION
FACILITY BOUNDARY

LOCATION MAP
NTS
N

CH2M
MATTHEW D. GAVIN
LIC. NO. 062-056650
2/22/2019
SIGNATURE AND SEAL APPLY TO ALL SHEETS 1-24 OF 24

LICENSED PROFESSIONAL ENGINEER
MATTHEW D. GAVIN
#062-056650
STATE OF ILLINOIS
Exp. 11/30/2019

NO.	DATE	REVISION	DR	CHK	APVD
1	02/13/19	REVISED FINAL DESIGN	RQ	BY	MG
DSGN	R VAUGHAN	D.SCHAUER	R VAUGHAN		M GAVIN

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

GENERAL
TITLE, LOCATION MAPS AND INDEX TO DRAWINGS

REVISED FINAL DESIGN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

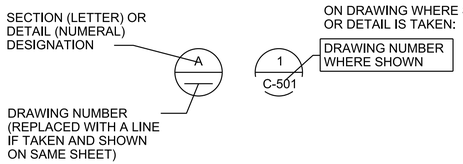
DATE	FEB 2019
PROJ	687729
DWG	G-001
SHEET	1 of 24

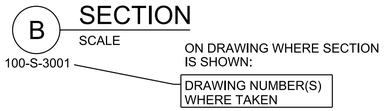
ABBREVIATIONS

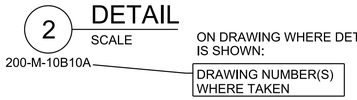
@	AT
AVE	AVENUE
BOT	BOTTOM
CIP	CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DR	DRIVE OR DIMENSION RATIO
E	EAST
EL	ELEVATION
EXST	EXISTING
EW	EACH WAY
FM	FORCE MAIN
FO	FIBER OPTIC
G	GAS
GM	GRAVITY MAIN
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ	HORIZONTAL
IL	PREFIX OF ILLINOIS STANDARD DETAIL
INV	INVERT
IP	IRON POST
IUM	ILLINOIS URBAN MANUAL
LT	LEFT
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
MJ	MECHANICAL JOINT
N	NORTH
NCP	NONREINFORCED CONCRETE PIPE
NO	NUMBER
NTS	NOT TO SCALE
OAZ	OLD AMERICAN ZINC PLANT
OC	ON CENTER
OD	OUTSIDE DIAMETER
OHP	OVERHEAD POWER
PE	PERMANENT EASEMENT
PL	PROPERTY LINE
PP	POWER POLE
PVC	POLYVINYLCHLORIDE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REQD	REQUIRED
RJ	RESTRAINED JOINT
RT	RIGHT
RR	RAILROAD
R/W	RIGHT OF WAY
S	SOUTH
SD	STORM DRAIN
SDR	STANDARD DIMENSION RATIO
SN	SEWER MANHOLE NUMBER
SPECD	SPECIFIED
SS	SANITARY SEWER
SST	STAINLESS STEEL
STA	STATION
T, TEL	TELEPHONE
TE	TEMPORARY EASEMENT
TV	TELEVISION
TYP	TYPICAL
UGP	UNDERGROUND POWER
VERT	VERTICAL
W	WATER, WEST
W/	WITH
WT	WEIGHT

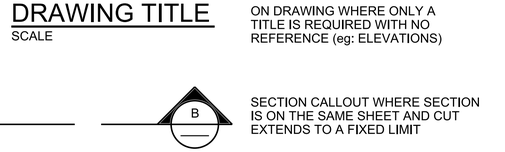
NOTE:
1. CONTACT THE ENGINEER FOR ABBREVIATIONS NOT LISTED.

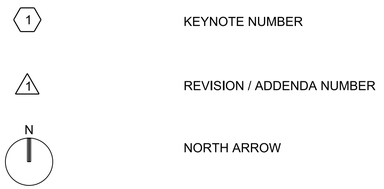
SECTION / DETAIL DESIGNATIONS



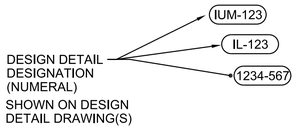






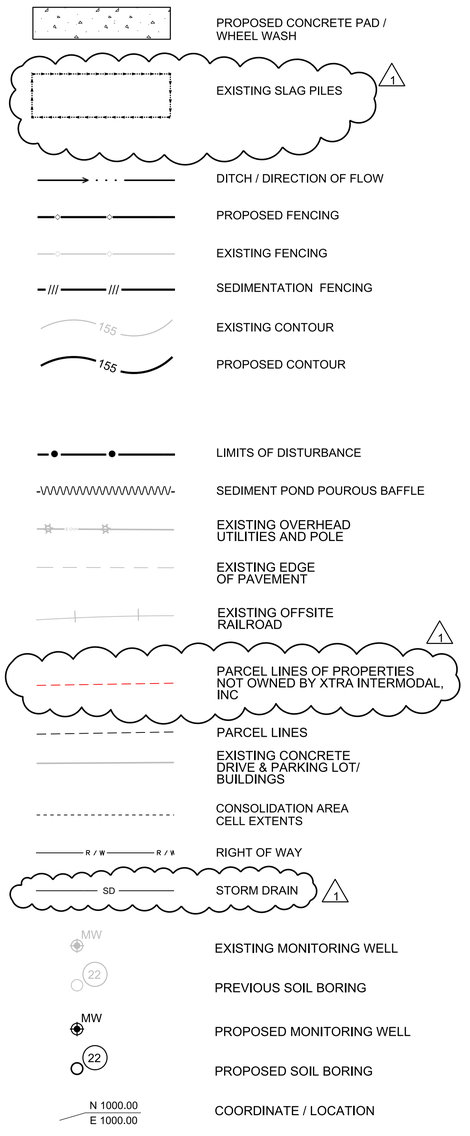


DESIGN DETAIL DESIGNATION



NOTES:
1. ALL DESIGN DETAILS ARE TYPICAL AND MUST BE USED IF DESIGN DETAIL DESIGNATION IS NOT SHOWN
2. THE TERM STANDARD DETAIL, OR A FORM OF IT, IS SYNOMONOUS WITH DESIGN DETAIL. THE DESIGN DETAILS REPRESENT THE CHARACTER AND NATURE OF THE WORK REQUIRED THROUGHOUT THE PROJECT. ALL ASSOCIATED WORK SHALL BE IN ACCORDANCE WITH THE DESIGN DETAILS SHOWN WHETHER THE DETAILS ARE SPECIFICALLY REFERENCED OR NOT.
3. (1234-567) SPECIFICATION FOR THESE DETAILS ARE FOUND IN PROJECT DOCUMENTS
4. (IL-123) AND (IUM-123) SPECIFICATIONS REFERENCED IN IL- AND IUM- STANDARD DETAILS ARE AVAILABLE IN THE ILLINOIS URBAN MANUAL, 2013 OR LATEST EDITION.

CIVIL LEGEND



NOTE:

IN GENERAL, EXISTING ITEMS ARE SHOWN LIGHT LINED (SHADED). NEW MODIFICATIONS ARE SHOWN IN HEAVY (NON-SHADED) LINE WEIGHTS. EXCEPTIONS ARE SHOWN IN GENERAL SHEET NOTES.

GENERAL NOTES

ENGINEERING HOLDS / WORK STOP:

1. CONTRACTOR SHALL OBSERVE ANY HOLDS SHOWN ON PLANS FOR INSPECTION OR COORDINATION PRIOR TO PERFORMING RELATED SCOPE OF WORK. HOLDS ARE RELEASED UPON PROPER DOCUMENTATION FROM RESIDENT ENGINEER.

UTILITIES:

1. CONTRACTOR SHALL COORDINATE SURVEY OF EXISTING UTILITIES AND DOCUMENT ACTUAL LOCATION ON THE PROPERTY DRAWING PRIOR TO PERFORMING EXCAVATION. MINIMUM SURVEY METHODS SHOULD INCLUDE UTILIZATION OF THE 811 ONE-CALL UTILITY LOCATION SYSTEM (JULIE) AS WELL AS COORDINATION WITH PROPERTY OWNER.
2. CONTRACTOR SHALL OBSERVE ANY EXCAVATION OR STOCKPILE SETBACKS SHOWN ON PLANS, DETAILS, OR AS SPECIFIED. CONTRACTOR SHALL COORDINATE THE MOVEMENT OF INTERFERING UTILITIES. OWNERS OF THOSE UNABLE TO BE MOVED SHALL PRESENT EASEMENT PRIOR RIGHTS AND PROVIDE REASONABLE EXCAVATION SETBACKS.

EROSION PREVENTION AND SEDIMENT CONTROL:

1 SEDIMENT BARRIER (TURBIDITY/ SILT FENCE/ CHECK DAM) IS REQUIRED AT IMMEDIATE DOWNSTREAM END OF ALL DISTURBED AREAS.

2 CONTRACTOR SHALL REMOVE SEDIMENT THAT IS ONE OR MORE FEET IN DEPTH AGAINST THE SEDIMENT BARRIER.

3 ALL CULVERTS AND CROSS DRAINS AFFECTED BY UPSTREAM WORK SHALL BE DESILTED ONCE UPSTREAM WORK IS COMPLETED.

4. SPECIFICATIONS REFERENCED IN IL- AND IUM- STANDARD DETAILS ARE AVAILABLE IN THE ILLINOIS URBAN MANUAL, 2013 OR LATEST EDITION.
5. CONTRACTOR IS RESPONSIBLE TO CONFORM WITH ALL REQUIREMENTS IN ILR-10 NATIONAL GENERAL PERMIT INCLUDING PERPARING AND SUBMITTING TO THE OWNER A STORM WATER POLLUTION PREVENTION PLAN (SWPPP). CONTRACTOR IS RESPONSIBLE FOR PREVENTING SEDIMENT TRACKING OFFSITE AND FOR PROTECTING OUTFALLS FROM CONTAMINATION. FOR MINIMUM EROSION AND SEDIMENT CONTROL PRACTICES SEE SITE SUPPORT DRAWINGS C-201 THRU C-206.

SEQUENCE OF CONSTRUCTION:

1. SEQUENCE OF SLAG REMOVAL
SHOULD BE PERFORMED IN MANNER THAT AIDS IN TRAPPING SEDIMENT IN EVENT OF STORM OR WIND EROSION. SEQUENCE SHOULD OPTIMIZE CLAY REMOVAL WITH BACKFILL OF SLAG TO CONSOLIDATION AREA AND MINIMIZE EXCESSIVE HANDLING. WHEN NECESSARY, SEE STOCKPILE CONSIDERATIONS ON C-502 DETAIL 1.

SURVEY

1
1. EXISTING TOPOGRAPHY SURVEY DATA WAS PERFORMED IN FEBRUARY 2016.
2. SOURCE OF TOPOGRAPHY SHOWN ON THE PLANS ARE BASE MAPS PERFORMED IN FEBRUARY 2016. VERTICAL DATUM REFERENCED SHALL BE VERIFIED PRIOR TO COMMENCING WORK. CONTROL POINT DATA USED DURING SURVEY WORK IS SHOWN ON PLANS.
3. SOURCE OF EXISTING MONITORING WELL COORDINATES AND TOP OF CASING ELEVATION WERE PERFORMED BY JUNEAU ASSOCIATES.
4. MAINTAIN, RELOCATE, OR REPLACE EXISTING SURVEY MONUMENTS, CONTROL POINTS, AND STAKES WHICH ARE DISTURBED OR DESTROYED. PERFORM THE WORK TO PRODUCE THE SAME LEVEL OF ACCURACY AS THE ORIGINAL MONUMENT(S) IN A TIMELY MANNER, AND AT THE CONTRACTOR'S EXPENSE.
5. COORDINATES AND HORIZONTAL DATA SHOWN HEREON ARE IN FEET AND ARE PROJECTED ONTO THE IL83-WF ILLINOIS STATE PLANES COORDINATE SYSTEM, WEST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83).

1
6. BENCHMARKS:
BENCHMARK #X:
CUT BOX ON CONCRETE PAD
X= 2 316 156.31
Y= 721 040.64
ELEV= 421.60

BENCHMARK #Z:
CUT BOX ON WALL
X= 2 317 259.68
Y= 721 067.97
ELEV= 420.26

NOTE:

PER FIGURES WITHIN SITE INVESTIGATION REPORTS, VOIDS BENEATH SURFACE HAVE BEEN FOUND ON FACILITY AREA. VOIDS ARE NOT SHOWN ON DRAWING DUE TO ACCURACY OF LOCATION. CONSULT ENGINEERING FOR ADDITIONAL INFORMATION.

NO.	DATE	REVISION	DR	CHK	APVD
1	02/13/19	REVISED FINAL DESIGN	R QUINNEY	R VAUGHAN	M GAVIN
DSGN	R QUINNEY		RQ	BY	APVD

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

ch2m

GENERAL

LEGEND AND GENERAL NOTES

REVISED FINAL DESIGN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2019
PROJ	687729
DWG	G-002
SHEET	2 of 24

FOR INFORMATION ONLY

MAINTENANCE OF TRAFFIC SIGNAGE			
No.	QTY	TYPE	MUTCD SIGN
B-01	1	III - 6 FT	M4-10 LEFT, R11-4
B-02	3	III - 8 FT	R11-2 MIDDLE ONLY
B-03	1	I	M4-8a
B-04	1	POST	M4-9 RIGHT
B-05	1	POST	M4-9 LEFT, MARYLAND AVE
B-06	1	III - 6 FT	M4-10 LEFT, R11-4
B-07	2	III - 8 FT	R11-2
B-08	1	III - 6 FT	M4-10 LEFT, R11-4
B-09	2	III - 8 FT	R11-2
B-10	1	III - 6 FT	M4-10 LEFT, R11-4
B-11	2	III - 8 FT	R11-4
B-12	1	III - 6 FT	M4-10 LEFT, R11-4
B-13	2	III - 8 FT	R11-4
B-14	1	POST	M4-9 RIGHT, MARYLAND AVE
B-15	1	POST	M4-9 LEFT, MARYLAND AVE
B-16	3	III - 8 FT	R11-2 MIDDLE ONLY
B-17	1	POST	W20-3
B-18	1	III - 6 FT	M4-10 RIGHT, R11-4
B-19	1	POST	M4-8a

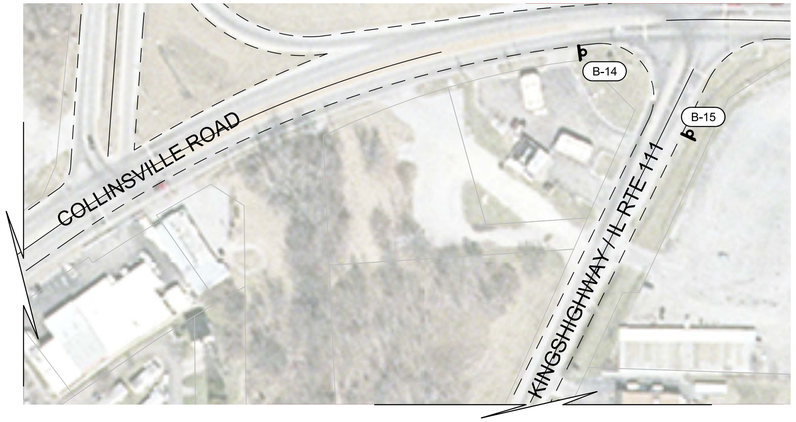
N

0 100 200 300

1"= 100'

GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF TRAFFIC AND OBTAINING APPROPRIATE AUTHORIZATION (E.G. CITY, COUNTY, STATE) IN THE EVENT A TEMPORARY PARTIAL ROAD CLOSURE OF MARYLAND AVENUE IS NECESSARYFOR HEAVY EQUIPMENT TO EXCAVATE PARCELS NORTH OF MARYLAND AVENUE . 1
2. CONTRACTOR SHALL INSTALL, MAINTAIN, INSPECT, AND REMOVE TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) LATEST EDITION, AND ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARDS FOR ROAD CLOSURE. DEVICES SHOWN ARE FOR EXAMPLE ONLY AS CONSTRUCTION TRAFFIC MAY CHANGE.
3. TEMPORARY CONSTRUCTION FENCING SHALL NOT BE WITHIN ROADWAY UNLESS CITY AND/OR APPROPRIATE AUTHORITY APPROVES AND PROPER TRAFFIC CONTROL DEVICES HAVE BEEN SET IN PLACE.
4. FOR FENCING, SEE SITE SUPPORT DRAWINGS.
5. FOR EROSION AND SEDIMENT CONTROL PRACTICES, SEE SITE SUPPORT DRAWINGS.



NO.	DATE	REVISION	DR	CHK	APVD
DSGN	R QUINNEY	R QUINNEY	R QUINNEY	R MORRISON	M GAVIN
1	02/13/19	REVISED FINAL DESIGN	RQ	BY	APVD
			MG		

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

CIVIL

MAINTENANCE OF TRAFFIC

FOR INFORMATION ONLY

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-001
SHEET	3 of 24

GENERAL SHEET NOTES

1. THIS PARCEL DATA SHEET WAS LAST UPDATED IN JULY 2018 FROM RECORDS WITHIN ST. CLAIR COUNTY'S GIS SYSTEM. IDENTIFICATION # CAN BE FOUND WITHIN THE DRAWINGS WITH A RECTANGLE AROUND THE NUMBER. EXAMPLE: [1]
2. CONTRACTOR TO COORDINATE WITH THE OWNERS OF PARCELS WITHIN PROJECT LIMITS FOR PROPERTY ACCESS.
3. CONTRACTOR TO RECEIVE WRITTEN AUTHORIZATION FROM OWNERS FOR PROPOSED WORK WITHIN THE OWNER'S PROPERTY.

PARCEL DATA SHEET: PROPERTIES ADJOINING XTRA INTERMODAL, INC.

[redacted]

PERMISSIONS CHECKLIST						
GENERAL ACCESS	REMOVAL OF			INSTALLATION OF		
	VEGETATION	STRUCTURES	FENCE	DRAINAGE STRUCTURE	FENCE	GRADING AND FILL

NO.	DATE	REVISION	BY	APVD
1	02/13/19	REVISED FINAL DESIGN	RQ	MG

DSGN R QUINNEY | DR R QUINNEY | CHK R VAUGHAN | APVD M GAVIN

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

ch2m

CIVIL

PARCEL DATA SHEET

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-002
SHEET	4 of 24

REVISED FINAL DESIGN

GENERAL SHEET NOTES

1. EXISTING CONTOURS AND FEATURES ARE SHOWN AS DARK LINED (NON-SHADED) THIS DRAWING.
2. EXISTING TOPOGRAPHY SHOWN ON PLANS IS FROM BASE MAPS FROM A TOPOGRAPHIC SURVEY PERFORMED IN FEBRUARY 2016.

N

0 100 200 300

1"= 100'

COLLINSVILLE ROAD
NORTH 51ST STREET
NORTH 49TH STREET
NORTH 48TH STREET
NORTH 47TH STREET
NORTH 45TH STREET
KOENIGS MARK AVENUE
WOODROW AVE.
MARYLAND AVENUE
KINGSHIGHWAY /IL RTE 111

OUTFALL #1 (WEST DITCH 1) EXISTING 12 IN CMP CULVERT I.E. = 407.35 SEE C-002, TYP.
EXISTING 12 IN. VCP CULVERT
EXISTING EDGE OF PAVEMENT (TYPICAL)
EXISTING OVERHEAD UTILITIES AND POLE (TYPICAL)
EXISTING HYDRANT (TYPICAL)
CONTROL POINT #5 N 722 977.037 E 2 316 081.144 EL 421.13 REBAR W/ SMS CAP
CONTROL POINT #6 N 722 975.821 E 2 317 583.197 EL 416.83 CUT "X" ON HANDHOLE
CONTROL POINT #4 N 722 829.938 E 2 315 069.807 EL 420.85 REBAR W/ SMS CAP
CONTROL POINT #3 N 722 572.853 E 2 314 726.690 EL 420.08 CUT "X" ON SIDEWALK
± 340' NW CORNER TO CL MARYLAND AVE.
EXISTING STORM MH. TOP = 420.36 SE = 415.90 NW = 414.94
EXISTING 15" RCP 36 FT ± NE = 417.11 SW = 417.11
EXISTING 30" RCP CULVERT 48' ± LONG S.E. = 416.04 N.W. = 416.42
EXISTING 18 IN. CMP OUTFALL I.E. = 416.40
EXISTING DITCH
MONITORING WELL N 722 581.32 E 2 316 059.09 EL 422.98 (TOP)
PARCELS NOT OWNED BY XTRA INTERMODAL, INC. TYP. OBTAIN APPROPRIATE PERMISSIONS. (SEE C-002)
EXISTING FENCE CORNER
EXISTING BUILDING
EXISTING FENCE CORNER
EXISTING FENCE
EXISTING OVERHEAD POWER
EXISTING 36' DOUBLE CANTILEVER GATE.
EXISTING 36" CMP CULVERT 48' ± LONG NE = 413.02 SW = 412.72
EXISTING DITCH IN RIGHT-OF-WAY
EXISTING RCP BOX CULVERT 3' X 2.5' E = 414.68 W = 414.34
EXISTING EAST DITCH 1
EXISTING GRAVEL
MONITORING WELL N 722 389.71 E 2 314 988.80 EL. 422.98 (TOP)
± 2050' FROM CL MARYLAND AVE. TO CL COOKSON RD
ST. CLAIR COUNTY PARCEL LINES. VERIFY WITH SURVEY BEFORE SETTING PROJECT LIMITS.
EXISTING GRAVEL
EXISTING FENCE
EXISTING FENCE CORNER
EXISTING WEST DITCH 1
VEGETATED HILLS MAY INCLUDE SOIL ON TOP OF SLAG
EXISTING SLAG STOCKPILE
CONTROL POINT #1 N 722 258.430 E 2 317 098.177 EL 419.38 REBAR W/ SMS CAP
EXISTING PAVEMENT & BUILDINGS
BLDG. F.F. = 419.3 ±
BLDG. F.F. = 419.1 ±
ST. CLAIR COUNTY PARCEL LINES. VERIFY WITH SURVEY
MW
26.3'
40'
50'
60'
15'

MATCHLINE - SEE C-102

NO.	DATE	REVISION	BY	APVD
1	02/13/19	REVISED FINAL DESIGN	RQ	MG

DSGN R QUINNEY DR R QUINNEY CHK R VAUGHAN APVD M GAVIN

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

ch2m:

CIVIL

FACILITIES AREA
EXISTING CONDITIONS - NORTH

REVISED FINAL DESIGN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-101
SHEET	5 of 24

$PWURL $PWPATH FILENAME: 005-C-1001_687729.dgn PLOT DATE: 2/22/2019 PLOT TIME: 2:05:57 PM

MATCHLINE - SEE C-101

NORTH 45TH STREET

KINGSHIGHWAY / IL RTE 111

COOKSON RD

EXISTING FENCE

EXISTING SLAG STOCKPILE

50' R/W

MONITORING WELL
N 721 043.48
E 2 314 972.15
EL. 423.51 (TOP)

MW

± 2059' FROM CL MARYLAND AVE TO CL COOKSON RD

26.3'

15'

EXISTING DOUBLE CANTILEVER SLIDE GATE.

60'

15' ±

15'

258'

± 681' FROM CL COOKSON RD TO SW CORNER

300.4'

± 199.2'

31

30

29

END OF EXISTING FENCE (APPROX.)

EXISTING WEST DITCH 2

EXISTING 48" CMP CULVERT 60' ± LONG
NE = 413.09
SW = 413.35

OUTFALL #2 AND ROSE CREEK

1

BENCHMARK #X
N 721 039.199
E 2,316 151.682
EL 421.60
CUT BOX ON CONCRETE PAD

BM

EXISTING ROSE CREEK

EXISTING OFFSITE RAIL ROAD (TYP.)

EXISTING BUILDINGS

± 1353'

EXISTING OFFSITE CULVERT

EXISTING OFFSITE DITCH

± 1140' TO CL IL RT 111

EXISTING DOUBLE SWING GATE.

MW

MONITORING WELL
N 720 361.07
E 2 316 471.70
EL 422.78 (TOP)

EXISTING (2) 48" RCP CULVERTS 38' ± LONG
N = 412.58
S = 411.35

EXISTING RCP CULVERT 2' X 2'
E = UNKNOWN
W = 414.83 ±

± 645'

28

PARCEL NOT OWNED BY XTRA INTERMODAL, INC. (TYP.)
OBTAIN APPROPRIATE PERMISSIONS. (SEE C-002)

± 70'

ST. CLAIR COUNTY PARCEL LINES, TYP.

EXISTING EAST DITCH 2

EXISTING (2) 48" RCP CULVERTS 32' ± LONG
NE = 412.74
SW = 412.73

EXISTING EAST DITCH 1

CONTROL POINT #7
N 720 547.251
E 2 317 588.907
EL 421.33
CUT "X" ON SIDEWALK

EXISTING 18' ± DOUBLE SWING GATE

EXISTING FENCE

EXISTING BARBED WIRE FENCE

BENCHMARK #2
N 721 066.531
E 2 317 255.048
EL 420.26
CUT BOX ON WALL

EXISTING 24 FT ± LONG CULVERT

EXISTING CONCRETE DRIVE AND PARKING LOT

EXISTING 40' ± DOUBLE CANTILEVER GATE.

EXISTING GRAVEL

BLDG. F.F. = 417.5

BLDG. F.F. = 420.0 ±

E-OVH

GENERAL SHEET NOTES

1. EXISTING CONTOURS AND FEATURES ARE SHOWN AS DARK LINED (NON-SHADED) THIS DRAWING.
2. EXISTING TOPOGRAPHY SHOWN ON PLANS IS FROM BASE MAPS FROM A TOPOGRAPHIC SURVEY PERFORMED IN FEBRUARY 2016.

N

0 100 200 300

1"= 100'

NO.	DATE	REVISION	CHK	BY	APVD
1	02/13/19	REVISED FINAL DESIGN	R QUINNEY	R VAUGHAN	M GAVIN
DSGN	R QUINNEY	DR		APVD	

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

ch2m

CIVIL

FACILITIES AREA
EXISTING CONDITIONS - SOUTH

REVISED FINAL DESIGN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-102
SHEET	6 of 24

$PWURL $PWPATH FILENAME: 005-C-1002_687729.dgn PLOT DATE: 2/22/2019 PLOT TIME: 2:09:00 PM

GENERAL SHEET NOTES

1. EXISTING CONTOURS AND FEATURES ARE SHOWN LIGHT LINED (SHADED) AND PROPOSED EXCAVATION CONTOURS AND OTHER FEATURES ARE SHOWN AS DARK LINED (NON-SHADED).
2. EDGE OF EXCAVATION EXTENTS ARE TO BE GRADUALLY GRADED UP TO EXISTING GRADE TO SITE EXTENTS WHERE SLAG IS ENCOUNTERED.
3. OBTAIN PERMISSION BY OWNER PRIOR TO EXCAVATING PROPERTIES NOT OWNED BY XTRA, INTERMODAL INC. SEE DWG C-002
4. CONTRACTOR IS RESPONSIBLE FOR REPAIRS OF DAMAGES TO EXISTING ASPHALT PAVEMENT ROADS RESULTING FROM CONSTRUCTION TRAVEL.
5. EXCAVATION BUFFERS:
   DRIVEWAYS 10 FT; BUILDINGS 15 FT; UTILITY POLES: CONSULT UTILITY
6. REFER TO DETAIL 1 ON C-502 FOR TYPICAL STOCKPILE CONSIDERATIONS. (1)
7. CONTRACTOR WILL COORDINATE WITH SURROUNDING PROPERTIES CONTRACTOR FOR LOCATING POTENTIAL STOCKPILE AND/OR SPOIL PILES.

N

0 100 200 300
1"= 100'

COLLINSVILLE ROAD
NORTH 51ST STREET
NORTH 49TH STREET
NORTH 48TH STREET
NORTH 47TH STREET
NORTH 45TH STREET
WOODROW AVE.
KOENIGS MARK AVENUE
MARYLAND AVENUE
KINGSHIGHWAY / IL RTE 111

SEE C-201 FOR CONSTRUCTION HOLDS IN THESE AREAS
OUTFALL # 1 (WEST DITCH 1) EXISTING 12 IN CMP CULVERT I.E. = 407.35
0.5 FT SLAG EXCAVATION, MIN.
PROTECT EXISTING UNDERGROUND STORM SEWER
34, SEE C-002, TYP.
PROJECT LIMITS
PROTECT EXISTING STORM STRUCTURES
PROJECT LIMITS AND TEMPORARY CONSTRUCTION FENCING
NOTE 2
PARCELS NOT OWNED BY XTRA INTERMODAL, INC. TYP. OBTAIN APPROPRIATE PERMISSIONS. (SEE C-002)
EXISTING HYDRANT
EXISTING OVERHEAD UTILITIES
MONITORING WELL
N 722 581.32
E 2 316 059.09
EL 422.98 (TOP)
SEE C-201)
MONITORING WELL
N 722 389.71
E 2 314 988.80
EL 422.98 (TOP)
(SEE C-201)
EXISTING WEST DITCH 1
PROJECT LIMITS
EXISTING FENCE AND PROJECT LIMITS
EXISTING OVERHEAD POWER
MAIN ENTRY / EXIT
CONSULT UTILITY FOR RELOCATION OF INTERFERING POLES OR OBTAIN NECESSARY EXCAVATION BUFFER
EXISTING BUILDING AND PARKING LOT TO REMAIN
EXISTING DITCH IN RIGHT-OF-WAY
EXCAVATE SLAG IN THIS GRASSY AREA
EXISTING PAVEMENT & BUILDINGS TO REMAIN
EXISTING FENCE
NOTE 5
TEMPORARY SHORING
EXISTING CULVERT TO REMAIN
EXISTING EAST DITCH 1

MATCHLINE - SEE C-104

NO.	DATE	REVISION	DR	CHK	APVD
1	02/13/19	REVISED FINAL DESIGN	R QUINNEY	R VAUGHAN	M GAVIN

DSGN R QUINNEY

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

ch2m
CIVIL
SLAG EXCAVATION NORTH

REVISED FINAL DESIGN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-103
SHEET	7 of 24

MATCHLINE - SEE C-103

EXISTING FENCE / PROJECT LIMITS

NORTH 45TH STREET

COOKSON RD

SEE NOTE 6

MONITORING WELL
N 721 043.48
E 2 314 972.15
EL. 423.51 (TOP)
(SEE C-202)

N 721 314.75 ±
E 2 315 288.56 ±

CONSOLIDATION AREA CELL EXTENTS

N 721 314.41 ±
E 2 316 697.18 ±

KINGSHIGHWAY / IL RTE 111

BM

BLDG. F.F. = 416 ±

BLDG. F.F. = 420.0 ±

EXISTING EAST DITCH 1

SEDIMENT FENCE

N 720 663.68 ±
E 2 316 704.38 ±

EXISTING EAST DITCH 2

SEE C-202 FOR CONSTRUCTION HOLDS FOR THESE AREAS

ST. CLAIR COUNTY PARCEL LINES, TYP.

28 OBTAIN PERMISSIONS (C-002), DITCH AND VEGETATION DISTURBANCE LIMITS MAY VARY. SHOWN LIMITS: 0.009 ACRES, 111 LF ALONG PARCEL LINE. VERIFY PROPERTY LINES WITH SURVEY AS NEEDED.

MONITORING WELL
N 720 361.07
E 2 316 471.70
EL 422.78 (TOP)
(SEE C-202)

N 720 280.08 ±
E 2 316 327.53 ±

EXISTING WEST DITCH 2

N 720 010.90 ±
E 2 315 278.91 ±

PROTECT EXISTING OFFSITE DRAINAGE STRUCTURES FROM EXCAVATION.

EXISTING OFFSITE DITCH

SEE C-202 FOR CONSTRUCTION HOLDS IN THESE AREAS

EXISTING ROSE CREEK

PROTECT EXISTING 48" CMP CULVERT 60' ± LONG
NE = 413.09
SW = 413.35

29

OUTFALL #2 AND ROSE CREEK EXCAVATION

GENERAL SHEET NOTES

1. EXISTING CONTOURS AND FEATURES ARE SHOWN LIGHT LINED (SHADED) AND PROPOSED EXCAVATION CONTOURS AND OTHER FEATURES ARE SHOWN AS DARK LINED (NON-SHADED).
2. OBTAIN PERMISSION BY OWNER PRIOR TO EXCAVATING PROPERTIES NOT OWNED BY XTRA, INTERMODAL INC. SEE DWG C-002.
3. CONTRACTOR IS RESPONSIBLE FOR REPAIRS OF DAMAGES TO EXISTING ROADS RESULTING FROM CONSTRUCTION TRAVEL.
4. EXCAVATION BUFFERS:
   DRIVEWAYS 10 FT; BUILDINGS 15 FT; UTILITY POLES: CONSULT UTILITY
5. REFER TO DETAIL 1 ON C-502 FOR STOCKPILE CONSIDERATIONS.
6. EDGE OF EXCAVATION EXTENTS ARE TO BE GRADUALLY GRADED UP TO EXISTING GRADE TO SITE EXTENTS WHERE SLAG IS ENCOUNTERED.
7. CONTRACTOR WILL COORDINATE WITH SURROUNDING PROPERTIES CONTRACTOR FOR LOCATING POTENTIAL STOCKPILE AND/OR SPOIL PILES.

1

N

0 100 200 300
1"= 100'

NO.	DATE	REVISION	DR	CHK	APVD
1	02/13/19	REVISED FINAL DESIGN	R QUINNEY	R VAUGHAN	M GAVIN
DSGN			R QUINNEY	RQ	BY
					APVD
					MG

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

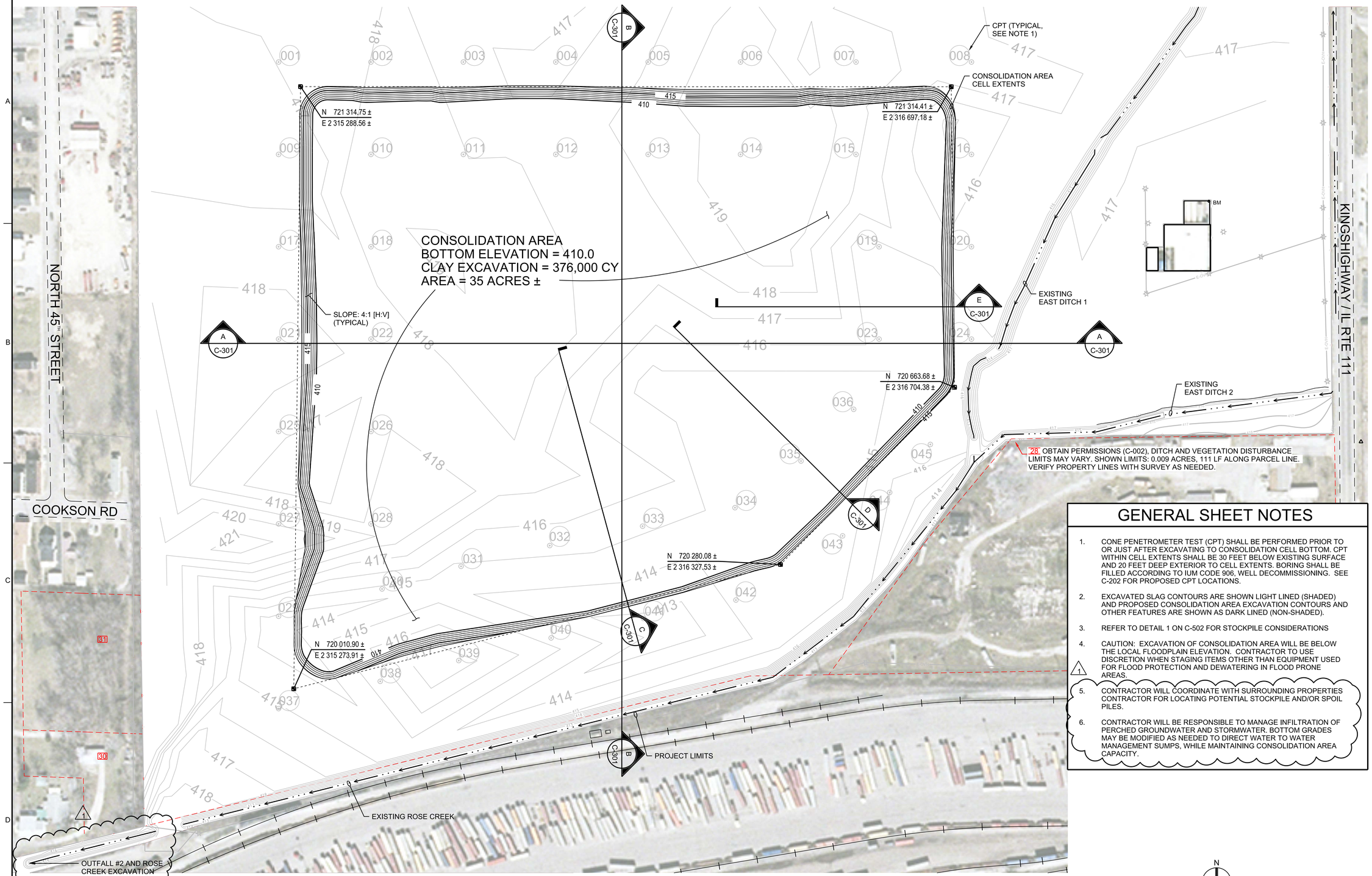
CIVIL

SLAG EXCAVATION SOUTH

REVISED FINAL DESIGN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING,
0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-104
SHEET	8 of 24



GENERAL SHEET NOTES

1. CONE PENETROMETER TEST (CPT) SHALL BE PERFORMED PRIOR TO OR JUST AFTER EXCAVATING TO CONSOLIDATION CELL BOTTOM. CPT WITHIN CELL EXTENTS SHALL BE 30 FEET BELOW EXISTING SURFACE AND 20 FEET DEEP EXTERIOR TO CELL EXTENTS. BORING SHALL BE FILLED ACCORDING TO IUM CODE 906, WELL DECOMMISSIONING. SEE C-202 FOR PROPOSED CPT LOCATIONS.
2. EXCAVATED SLAG CONTOURS ARE SHOWN LIGHT LINED (SHADED) AND PROPOSED CONSOLIDATION AREA EXCAVATION CONTOURS AND OTHER FEATURES ARE SHOWN AS DARK LINED (NON-SHADED).
3. REFER TO DETAIL 1 ON C-502 FOR STOCKPILE CONSIDERATIONS
4. CAUTION: EXCAVATION OF CONSOLIDATION AREA WILL BE BELOW THE LOCAL FLOODPLAIN ELEVATION. CONTRACTOR TO USE DISCRETION WHEN STAGING ITEMS OTHER THAN EQUIPMENT USED FOR FLOOD PROTECTION AND DEWATERING IN FLOOD PRONE AREAS.
5. CONTRACTOR WILL COORDINATE WITH SURROUNDING PROPERTIES CONTRACTOR FOR LOCATING POTENTIAL STOCKPILE AND/OR SPOIL PILES.
6. CONTRACTOR WILL BE RESPONSIBLE TO MANAGE INFILTRATION OF PERCHED GROUNDWATER AND STORMWATER. BOTTOM GRADES MAY BE MODIFIED AS NEEDED TO DIRECT WATER TO WATER MANAGEMENT SUMPS, WHILE MAINTAINING CONSOLIDATION AREA CAPACITY.

N

0 100 200 300
1"= 100'

NO.	DATE	REVISION	DR	CHK	APVD
1	02/13/19	REVISED FINAL DESIGN	RQ	BY	MG
DSGN	R QUINNEY		R QUINNEY	T OXLEY	M GAVIN

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

CIVIL

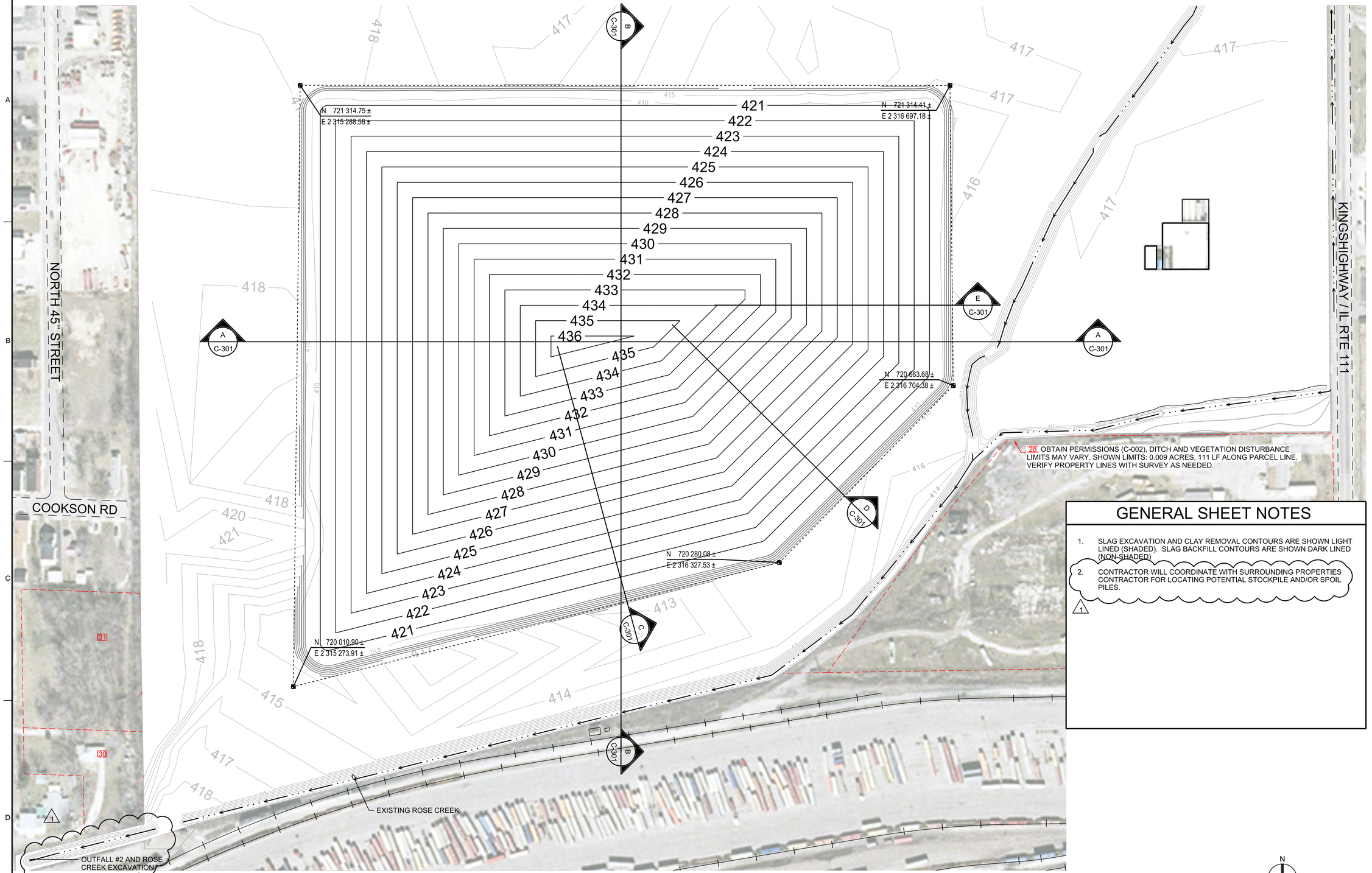
CONSOLIDATION AREA CLAY REMOVAL

REVISED FINAL DESIGN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-105
SHEET	9 of 24

$PWURL $PWPATH FILENAME: 005-C-1005_687729.dgn PLOT DATE: 2/22/2019 PLOT TIME: 2:05:03 PM



GENERAL SHEET NOTES

1. SLAG EXCAVATION AND CLAY REMOVAL CONTOURS ARE SHOWN LIGHT LINED (SHADED). SLAG BACKFILL CONTOURS ARE SHOWN DARK LINED (NON-SHADED)
2. CONTRACTOR WILL COORDINATE WITH SURROUNDING PROPERTIES CONTRACTOR FOR LOCATING POTENTIAL STOCKPILE AND/OR SPOIL PILES.

1

N

0 100 200 300
1"= 100'

NO.	DATE	REVISION	CHK	APVD
1	02/13/19	REVISED FINAL DESIGN	RQ	MG
DSGN	R QUINNEY	DR R QUINNEY	BY R VAUGHAN	APVD M GAVIN

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

ch2m

CIVIL

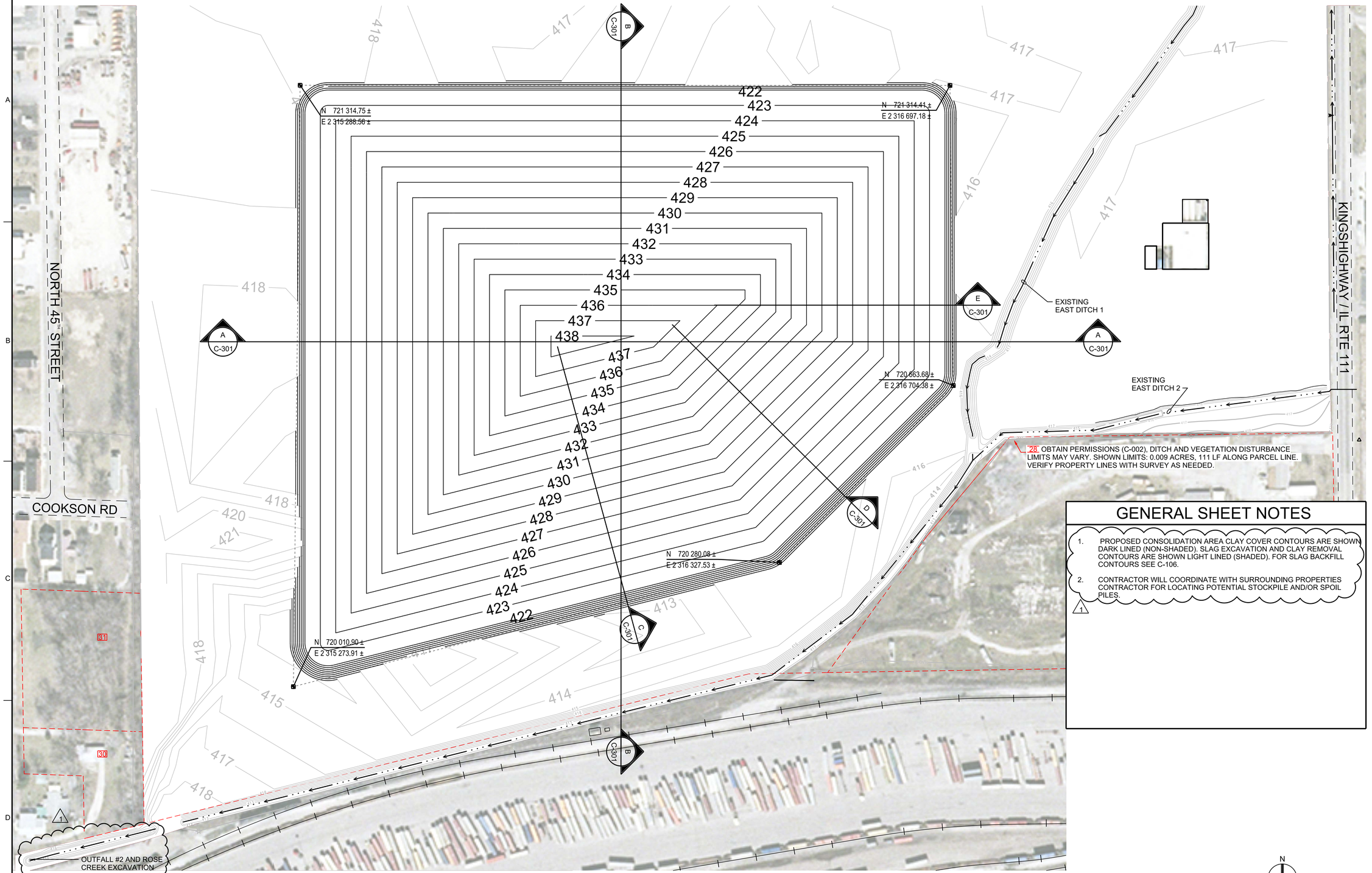
CONSOLIDATION AREA SLAG BACKFILL

REVISED FINAL DESIGN

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-106
SHEET	10 of 24



GENERAL SHEET NOTES

1. PROPOSED CONSOLIDATION AREA CLAY COVER CONTOURS ARE SHOWN DARK LINED (NON-SHADED). SLAG EXCAVATION AND CLAY REMOVAL CONTOURS ARE SHOWN LIGHT LINED (SHADED). FOR SLAG BACKFILL CONTOURS SEE C-106.
2. CONTRACTOR WILL COORDINATE WITH SURROUNDING PROPERTIES CONTRACTOR FOR LOCATING POTENTIAL STOCKPILE AND/OR SPOIL PILES.

1

N

0 100 200 300

1"= 100'

NO.	DATE	REVISION	DR	CHK	APVD
1	02/13/19	REVISED FINAL DESIGN	R QUINNEY	R VAUGHAN	M GAVIN
DSGN	R QUINNEY		RQ	BY	APVD

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

ch2m.

CIVIL

CONSOLIDATION AREA CLAY COVER

REVISED FINAL DESIGN

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-107
SHEET	11 of 24

GENERAL SHEET NOTES

1. BOTTOM OF SLAG CONTOURS AND FEATURES ARE SHOWN LIGHT LINED (SHADED) AND PROPOSED GENERAL FILL CONTOURS AND OTHER FEATURES ARE SHOWN AS DARK LINED (NON-SHADED).
2. PROTECT OUTFALLS TO PREVENT OFFSITE SEDIMENT TRANSPORT. FOR MINIMUM EROSION AND SEDIMENT CONTROL PRACTICES SEE SITE SUPPORT DRAWINGS.
3. OBTAIN PERMISSION BY OWNER PRIOR TO GRADING DITCHES ON PROPERTIES NOT OWNED BY XTRA, INTERMODAL INC. SEE DWG C-002
4. CONTRACTOR IS RESPONSIBLE FOR REPAIRS OF DAMAGES TO EXISTING ROADS RESULTING FROM CONSTRUCTION TRAVEL.
5. CONTRACTOR WILL COORDINATE WITH SURROUNDING PROPERTIES CONTRACTOR FOR LOCATING POTENTIAL STOCKPILE AND/OR SPOIL PILES.

1

N

0 100 200 300

1"= 100'

COLLINSVILLE ROAD
NORTH 51ST STREET
NORTH 49TH STREET
NORTH 48TH STREET
NORTH 47TH STREET
NORTH 45TH STREET
WOODROW AVE.
KOENIGS MARK AVENUE
MARYLAND AVENUE
KINGSHIGHWAY / IL RTE 111

OUTFALL # 1
(WEST DITCH 1)
EXISTING 12 IN
CMP CULVERT
I.E. = 407.35

34, SEE C-002, TYP.

PARCELS NOT OWNED BY XTRA INTERMODAL, INC. TYP. OBTAIN APPROPRIATE PERMISSIONS. (SEE C-002)

DITCH # 9
IL-540T

INLET PROTECTION
IL-508ST

DITCH # 1
IL-540T

INLET PROTECTION
IL-508ST

DITCH # 8
IL-540T

6' BOTTOM

DITCH # 7
IL-540T

6' ± BOTTOM

25' LONG
24" CMP
CULVERT
N = 415.1
S = 414.7
LOCATE
BETWEEN
R.O.W.

DITCH # 1

DITCH # 1

INLET PROTECTION
IL-508ST

MATCHLINE - SEE C-108

NO.	DATE	REVISION	DR	CHK	APVD
1	02/13/19	REVISED FINAL DESIGN	R QUINNEY	R VAUGHAN	M GAVIN
			DSGN	BY	APVD
			R QUINNEY	RQ	MG

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

ch2m

CIVIL

SITE SUBGRADE AND DRAINAGE NORTH

REVISED FINAL DESIGN

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY

DATE	FEB 2019
PROJ	687729
DWG	C-108
SHEET	12 of 24

$PWURL $PWPATH FILENAME: 005-C-1008_687729.dgn PLOT DATE: 2/22/2019 PLOT TIME: 2:08:29 PM

MATCHLINE - SEE C-107

NORTH 45TH STREET

KINGSHIGHWAY / IL RTE 111

COOKSON RD

N 721 314.75 ±
E 2 315 288.56 ±

N 721 314.41 ±
E 2 316 697.18 ±

N 720 663.68 ±
E 2 316 704.38 ±

N 720 280.08 ±
E 2 316 327.53 ±

N 720 010.90 ±
E 2 315 273.91 ±

DITCH # 7
IL-540T

DITCH # 12
IL-540T

INLET PROTECTION
IL-508ST

15' ± BOTTOM

4:1

10:1

EXISTING
EAST DITCH 1

EXISTING
EAST DITCH 2

BM

OUTFALL #2
AND ROSE CREEK

28 OBTAIN PERMISSIONS (C-002). DITCH AND VEGETATION DISTURBANCE LIMITS MAY VARY. SHOWN LIMITS: 0.009 ACRES, 111 LF ALONG PARCEL LINE. VERIFY PROPERTY LINES WITH SURVEY AS NEEDED.

GENERAL SHEET NOTES

1. BOTTOM OF SLAG CONTOURS AND FEATURES ARE SHOWN LIGHT LINED (SHADED) AND PROPOSED GENERAL FILL CONTOURS AND OTHER FEATURES ARE SHOWN AS DARK LINED (NON-SHADED).
2. PROTECT OUTFALLS TO PREVENT OFFSITE SEDIMENT TRANSPORT. FOR MINIMUM EROSION AND SEDIMENT CONTROL PRACTICES SEE SITE SUPPORT DRAWINGS.
3. OBTAIN PERMISSION BY OWNER PRIOR TO GRADING DITCHES ON PROPERTIES NOT OWNED BY XTRA, INTERMODAL INC. SEE DWG C-002.
4. CONTRACTOR IS RESPONSIBLE FOR REPAIRS OF DAMAGES TO EXISTING ROADS RESULTING FROM CONSTRUCTION TRAVEL.
5. CONTRACTOR WILL COORDINATE WITH SURROUNDING PROPERTIES CONTRACTOR FOR LOCATING POTENTIAL STOCKPILE AND/OR SPOIL PILES.

△1

N

0 100 200 300
1"= 100'

NO.	DATE	REVISION	DR	CHK	APVD
1	02/13/19	REVISED FINAL DESIGN	R QUINNEY	R VAUGHAN	M GAVIN
DSGN	R QUINNEY		RQ	BY	APVD

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

CIVIL

SITE SUBGRADE AND DRAINAGE SOUTH

REVISED FINAL DESIGN

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-109
SHEET	13 of 24

GENERAL SHEET NOTES

1. EXCAVATED SLAG CONTOURS ARE SHOWN LIGHT LINED (SHADED). SITE SUPPORT ITEMS ARE SHOWN DARK (NON-SHADED).
2. REFER TO DETAIL 1 ON C-502 FOR TYPICAL STOCKPILE CONSIDERATIONS
3. CLEAR & GRUB ENTIRE SITE WITHIN PROJECT LIMITS. (TOTAL AREA OF DENSE PATHES OF TREES IS ±11 ACRES)
4. SECURE PROJECT WITH FENCING PRIOR TO REMOVAL OF EXISTING FENCING INTERIOR TO PROJECT AND EXCAVATION LIMITS. (1)
5. CONTRACTOR WILL COORDINATE WITH SURROUNDING PROPERTIES CONTRACTOR FOR LOCATING POTENTIAL STOCKPILE AND/OR SPOIL PILES.
6. EXISTING WEST DITCH 1 REMOVED DURING SLAG EXCAVATION.

N

0 100 200 300

1"= 100'

COLLINSVILLE ROAD
NORTH 51ST STREET
NORTH 49TH STREET
NORTH 48TH STREET
NORTH 47TH STREET
NORTH 45TH STREET
WOODROW AVE.
KOENIGS MARK AVENUE
MARYLAND AVENUE
KINGSHIGHWAY / IL RTE 111

(1) SEDIMENT FENCE IUM-620
OUTFALL # 1 (WEST DITCH 1) EXISTING 12 IN CMP CULVERT I.E. = 407.35
34, SEE C-002, TYP.
PROJECT LIMITS
OUTFALL # 1: PROTECT EXISTING STORM STRUCTURES: CULVERT, MANHOLE AND CULVERT
WEST DITCH 1 TEMPORARY SEDIMENT TRAP IUM-660P
TEMPORARY CONSTRUCTION FENCING (SEE NOTE) 3231-410
PROTECT EXISTING CULVERTS
ST. CLAIR COUNTY PARCEL LINES. VERIFY WITH SURVEY
GRAVEL CONSTRUCTION ENTRY / EXIT 3125-130
DOUBLE SWING GATE 3231-415
MW PERFORM WELL DECOMMISSIONING PER IUM CODE 996
416 STAKED POUROUS BAFFLES (1 OF 3 MIN.)
INLET PROTECTION IL-508ST
FENCE TRANSITION, TIE INTO EXISTING
INSTALL 20' WIDE MIN. 6' HIGH MIN. GATE FOR CONSTRUCTION INGRESS / EGRESS. LOCATE AND STYLE ACCORDINGLY.
GRAVEL CONSTRUCTION ENTRY / EXIT. LOCATE ACCORDINGLY. 3125-130
EXISTING FENCE TO REMAIN
MW PERFORM WELL DECOMMISSIONING (PER IUM CODE 996)
EXISTING HYDRANT
EXISTING OVERHEAD UTILITIES
FENCE TRANSITION, TIE INTO EXISTING
PARCELS NOT OWNED BY XTRA INTERMODAL, INC. TYP. OBTAIN APPROPRIATE PERMISSIONS. (SEE C-002)
CHAIN LINK FENCE 3231-410
PROTECT EXISTING MONITORING WELL N 722 870.27 ± E 2 317 456.03 ±
MW
REMOVE EXISTING FENCE
CHAINLINK FENCE 3231-410
PROJECT LIMITS
ST. CLAIR COUNTY PARCEL LINES. VERIFY WITH SURVEY BEFORE SETTING PROJECT LIMITS AND FENCE INSTALLATION
TEMPORARY SEDIMENT BASIN W/ FOREBAY (IUM CODE 960)
REMOVE EXISTING FENCE
FENCE TRANSITION, TIE INTO EXISTING
TEMPORARY DIVERSION (IUM CODE 955)
PROJECT LIMITS
EXISTING FENCE TO REMAIN
FENCE TRANSITION, TIE INTO EXISTING
EXISTING FENCE TO REMAIN
REMOVE EXISTING FENCE
EXISTING OVERHEAD POWER
OPTIONAL STAGING AREA
REPAIR 36' DOUBLE CANTILEVER GATE. REPLACE AS NEEDED. 3231-425
OPTIONAL ENTRY/ EXIT
EXISTING DITCH IN RIGHT-OF-WAY
EXISTING FENCE AND GATE TO REMAIN
EXISTING PAVEMENT & BUILDINGS TO REMAIN
REMOVE FENCE AS NEEDED
EXISTING STORM STRUCTURES TO REMAIN

MATCHLINE - SEE C-202

NO.	DATE	REVISION	DR	CHK	APVD
1	02/13/19	REVISED FINAL DESIGN	R QUINNEY	R VAUGHAN	M GAVIN

DSGN R QUINNEY | RQ | BY | MG | APVD

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

ch2m.

CIVIL

SITE SUPPORT
INITIAL - NORTH

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-201
SHEET	14 of 24

REVISED FINAL DESIGN

$PWURL $PWPATH FILENAME: 005-C-2001_687729.dgn PLOT DATE: 2/22/2019 PLOT TIME: 2:06:34 PM

MATCHLINE - SEE C-201

EXISTING FENCE / PROJECT LIMITS

NORTH 45TH STREET

COOKSON RD

KINGSHIGHWAY / IL RTE 111

N 721 314.75 ±
E 2 315 288.56 ±

N 721 314.41 ±
E 2 316 697.18 ±

CPT (TYPICAL, SEE NOTE 1)

CONSOLIDATION AREA CELL EXTENTS

REMOVE EXISTING 24 FT ± LONG CULVERT

VERIFY OPERATION OF 40' ± DOUBLE CANTILEVER GATE. REPAIR OR REPLACE AS NEEDED. 3231-425

BM

BLDG. F.F. = 420.0 ±

EXISTING FENCE

MW PERFORM WELL DECOMMISSIONING PER IUM CODE 996

TEMPORARY DIVERSION (IUM CODE 955)

EXISTING EAST DITCH 1

INSTALL (2) 36" CMP CULVERTS 48' LONG WITH FLARED ENDS AND INLET PROTECTION (EACH END) NW = 414.50' SE = 414.00' IL-545 IL-508ST IL-580

REMOVE EXISTING (2) 48" RCP CULVERTS 32' ± LONG NE = 412.74 SW = 412.73

TEMPORARY DIVERSION (IUM CODE 955)

EXISTING RCP CULVERT 2' X 2' E = UNKNOWN W = 414.83 ±

N 720 663.68 ±
E 2 316 704.38 ±

TEMPORARY OUTFALL #2A TO ROSE CREEK. PROVIDE FILTER RING INLET PROTECTION FOR EXISTING CULVERTS. CREST EL. = 414.5. PROVIDE POSITIVE GRADING TO ALLOW DRAINAGE OF DITCH AND SEDIMENT BASIN AREA. IL-508ST

EXISTING EAST DITCH 2

ST. CLAIR COUNTY PARCEL LINES, TYP.

28 OBTAIN PERMISSIONS (C-002), DITCH AND VEGETATION DISTURBANCE LIMITS MAY VARY. SHOWN LIMITS: 0.009 ACRES, 111 LF ALONG PARCEL LINE. VERIFY PROPERTY LINES WITH SURVEY AS NEEDED.

CONSOLIDATION AREA FLOOD PROTECTION BERM TOP EL.= 417' MIN.

PORTABLE SEDIMENT TANKS (IF REQUIRED) QTY = 2 SETS; (1 FOR STAND-BY) V = 300 GAL ± EACH SURROUND WITH SEDIMENT FENCE. IL-595

REPLACE EXISTING WITH NEW 30' WIDE CHAINLINK SLIDE GATE 3231-425

GRAVEL CONSTRUCTION ENTRY / EXIT AND WHEEL WASH, IF REQUIRED 3125-130 3125-135

SEDIMENT FENCE (EACH SIDE OF ROAD) IUM-620

CHAINLINK FENCE 3231-410

PERFORM WELL DECOMMISSIONING PER IUM CODE 996

N 720 280.08 ±
E 2 316 327.53 ±

AREA IN WHICH HOLDS MAY BE ENFORCED.

TEMPORARY DIVERSION (IUM CODE 955)

100' ± WIDE

150' ± WIDE

N 720 010.90 ±
E 2 315 273.91 ±

EXISTING OFFSITE CULVERT

EXISTING OFFSITE DITCH

HOLD. OBTAIN PROPER SETBACK FROM UTILITY POLE OWNER, TYP.

HOLD. OBTAIN PROPER SETBACK FROM OWNER OF EXISTING BUILDINGS

CULVERT INLET PROTECTION IL-508ST

INSTALL 12' WIDE MIN. 6' HIGH MIN. GATE FOR TEMPORARY CONSTRUCTION INGRESS / EGRESS. LOCATE AND STYLE ACCORDINGLY.

ROSE CREEK

HOLD. DO NOT PROCEED WITH WORK WITHIN OR ALONG ROSE CREEK UNTIL THE FOLLOWING REQUIREMENTS ARE SATISFIED:
1) OBTAIN APPROPRIATE ADJACENT LANDOWNER PERMISSIONS AND/OR EASEMENTS, (SEE C-002),
2) OBTAIN AUTHORIZATION TO PROCEED FROM ILLINOIS FISH AND WILDLIFE,
3) OBTAIN AUTHORIZATION TO PROCEED FROM ILLINOIS DEPARTMENT OF NATURAL RESOURCES,
4) OBTAIN REQUIRED EXCAVATION AND/OR WORK BUFFERS NEAR ELECTRIC UTILITY POLES,
5) OBTAIN REQUIREMENTS FOR EXCAVATION AND/OR WORK ALONG RAILROAD FOUNDATION AND RIGHT-OF-WAY,
6) OBTAIN REQUIRED EXCAVATION AND/OR WORK BUFFERS NEAR BUILDINGS,
7) OBTAIN NOTICE TO PROCEED WITH WORK AND LIFT OF CONSTRUCTION HOLD WITHIN CREEK BY APPROPRIATE ILLINOIS LICENSED ENGINEER.

EXISTING CULVERT TO REMAIN: 48" CMP 60' ± LONG NE = 413.09 SW = 413.35

OUTFALL #2 AND ROSE CREEK EXCAVATION

N

0 100 200 300
1"= 100'

GENERAL SHEET NOTES

1. CONE PENETROMETER TEST (CPT) SHALL BE PERFORMED PRIOR TO OR JUST AFTER EXCAVATING TO CONSOLIDATION CELL BOTTOM. CPT WITHIN CELL EXTENTS SHALL BE 30 FEET BELOW EXISTING SURFACE AND 20 FEET DEEP EXTERIOR TO CELL EXTENTS. BORING SHALL BE FILLED ACCORDING TO IUM CODE 906, WELL DECOMMISSIONING. SEE TABLE BELOW FOR PROPOSED CPT LOCATIONS.
2. EXCAVATED SLAG CONTOURS ARE SHOWN LIGHT LINED (SHADED) AND PROPSED CONTOURS AND OTHER FEATURES ARE SHOWN AS LIGHT LINED (SHADED).
3. REFER TO DETAIL 1 ON C-502 FOR TYPICAL STOCKPILE REQUIREMENTS
4. SECURE PROJECT WITH FENCING PRIOR TO REMOVAL OF EXISTING FENCING INTERIOR TO PROJECT AND EXCAVATION LIMITS. 1
5. CONTRACTOR WILL COORDINATE WITH SURROUNDING PROPERTIES CONTRACTOR FOR LOCATING POTENTIAL STOCKPILE AND/OR SPOIL PILES.

CPT	East	North	Depth	CPT	East	North	Depth
CPT-001	2,315,241	721,368	20	CPT-023	2,316,541	720,768	30
CPT-002	2,315,441	721,368	20	CPT-024	2,316,741	720,768	20
CPT-003	2,315,641	721,368	20	CPT-025	2,315,241	720,568	20
CPT-004	2,315,841	721,368	20	CPT-026	2,315,441	720,568	30
CPT-005	2,316,041	721,368	20	CPT-027	2,315,241	720,368	20
CPT-006	2,316,241	721,368	30	CPT-028	2,315,441	720,368	30
CPT-007	2,316,491	721,368	20	CPT-029	2,315,241	720,168	20
CPT-008	2,316,741	721,368	20	CPT-030	2,315,465	720,227	30
CPT-009	2,315,241	721,168	20	CPT-031	2,315,636	720,276	30
CPT-010	2,315,441	721,168	30	CPT-032	2,315,828	720,321	30
CPT-011	2,315,641	721,168	30	CPT-033	2,316,029	720,363	30
CPT-012	2,315,841	721,168	30	CPT-034	2,316,229	720,403	30
CPT-013	2,316,041	721,168	30	CPT-035	2,316,372	720,504	30
CPT-014	2,316,241	721,168	30	CPT-036	2,316,486	720,616	30
CPT-015	2,316,491	721,168	30	CPT-037	2,315,241	719,968	20
CPT-016	2,316,741	721,168	20	CPT-038	2,315,461	720,027	20
CPT-017	2,315,241	720,968	20	CPT-039	2,315,631	720,072	20
CPT-018	2,315,441	720,968	30	CPT-040	2,315,831	720,121	20
CPT-019	2,316,541	720,968	30	CPT-041	2,316,031	720,163	20
CPT-020	2,316,741	720,968	20	CPT-042	2,316,231	720,203	20
CPT-021	2,315,241	720,768	20	CPT-043	2,316,462	720,342	20
CPT-022	2,315,441	720,768	30	CPT-044	2,316,564	720,436	20
				CPT-045	2,316,652	720,540	20

Coordinate System: IL83-WF
NAD83 Illinois State Planes, West Zone, US Foot

NO.	DATE	REVISION	CHK	APVD
1	02/13/19	REVISED FINAL DESIGN	R QUINNEY	R VAUGHAN

DSGN R QUINNEY DR RQ BY MG APVD M GAVIN

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

ch2m.

CIVIL

SITE SUPPORT
INITIAL - SOUTH

REVISED FINAL DESIGN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-202
SHEET	15 of 24

$PWURL $PWPATH FILENAME: 005-C-2002_687729.dgn PLOT DATE: 2/22/2019 PLOT TIME: 2:05:18 PM

GENERAL SHEET NOTES

1. GENERAL FILL CONTOURS ARE SHOWN LIGHT LINED (SHADED) AND PROPOSED SITE SUPPORT WORK AND FEATURES ARE SHOWN DARK LINED (NON-SHADED)
2. SEDIMENT BARRIER (TURBIDITY/ SILT FENCE/ CHECK DAM) IS REQUIRED AT IMMEDIATE DOWNSTREAM END OF ALL DISTURBED AREAS.
3. CONTRACTOR SHALL REMOVE SEDIMENT THAT IS ONE OR MORE FEET IN DEPTH AGAINST THE SEDIMENT BARRIER.
4. ALL CULVERTS AND CROSS DRAINS AFFECTED BY UPSTREAM WORK SHALL BE DESILTED ONCE UPSTREAM WORK IS COMPLETED. (1)
5. CONTRACTOR WILL COORDINATE WITH SURROUNDING PROPERTIES CONTRACTOR FOR LOCATING POTENTIAL STOCKPILE AND/OR SPOIL PILES.

N

0 100 200 300

1"= 100'

COLLINSVILLE ROAD
NORTH 51ST STREET
NORTH 49TH STREET
NORTH 48TH STREET
NORTH 47TH STREET
NORTH 45TH STREET
WOODROW AVE.
KOENIGS MARK AVENUE
MARYLAND AVENUE
KINGSHIGHWAY / IL RTE 111

(1) OUTFALL # 1 (WEST DITCH 1) EXISTING 12 IN CMP CULVERT I.E. = 407.35

34, SEE C-002, TYP.

EXISTING 12 IN. VCP CULVERT

PROJECT LIMITS

EROSION CONTROL BLANKET IUM-530

GRAVEL CONSTRUCTION ENTRY / EXIT

STREET CLEANING FOR DUST CONTROL (IUM CODE 825)

PARCELS NOT OWNED BY XTRA INTERMODAL, INC. TYP. OBTAIN APPROPRIATE PERMISSIONS. (SEE C-002)

STRAW BALE DITCH CHECK, TYP. 3125-170

FORMER MONITORING WELL N 722 581.32 E 2 316 059.09

GRAVEL CONSTRUCTION ENTRY / EXIT

FORMER MONITORING WELL N 722 359.71 E 2 314 988.80

EXISTING 30 IN RCP CULVERT S.E. = 416.04 N.W. = 416.42

PROJECT LIMITS

SEDIMENT FENCE, TYP. IUM-620

TEMPORARY SEEDING, TYPE 4B GRASSES IN DITCHES, TYP. (IUM CODE 965) 2/C-502

DUST CONTROL AND TEMPORARY SEEDING,TYPE 4 NATIVE GRASSES (IUM CODE: 825, 965)

INSTALL (1) 24" CMP CULVERT 25' LONG WITH FLARED ENDS AND INLET PROTECTION (EACH END) IL-545 IL-508ST IL-580
N = 415.2'
S = 414.7'

EXISTING OVERHEAD POWER

MAIN ENTRY / EXIT

SEDIMENT FENCE IUM-620

EXISTING DITCH IN RIGHT-OF-WAY

EXISTING PAVEMENT & BUILDINGS

IMPERVIOUS AREA RUNOFF FLOW PATH

EROSION CONTROL BLANKET IUM-530

NO.	DATE	REVISION	BY	APVD
1	02/13/19	REVISED FINAL DESIGN	RQ	MG

DSGN R QUINNEY DR R QUINNEY CHK R VAUGHAN APVD M GAVIN

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

ch2m.

CIVIL

SITE SUPPORT
INTERMEDIATE - NORTH

REVISED FINAL DESIGN

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-203
SHEET	16 of 24

PROJECT LIMITS

MONITORING WELL
N 721 043.48
E 2 314 972.15
EL. 423.51 (TOP)
(SEE C-202)

N 721 314.75 ±
E 2 315 288.56 ±

SURFACE ROUGHENING, DUST CONTROL, AND TEMPORARY SEEDING, TYPE 4 NATIVE GRASSES 35 +/- ACRES (IUM CODES 953, 825, 965)

CPT (TYPICAL, SEE NOTE 1)

N 721 314.41 ±
E 2 316 697.18 ±

CONSOLIDATION AREA CELL EXTENTS

STRAW BALE DITCH CHECK, TYP.
3125-170

BM

BLDG. F.F. = 416.1 ±

BLDG. F.F. = 420.0 ±

EXISTING FENCE

SEDIMENT FENCE
IUM-620

EXISTING EAST DITCH 1

N 720 663.68 ±
E 2 316 704.38 ±

SEDIMENT FENCE
IUM-620

EXISTING RCP CULVERT 2' X 2'
E = UNKNOWN
W = 414.83 ±

EXISTING EAST DITCH 2

ST. CLAIR COUNTY PARCEL LINES, TYP.

28 OBTAIN PERMISSIONS (C-002). DITCH AND VEGETATION DISTURBANCE LIMITS MAY VARY. SHOWN LIMITS: 0.16 ACRES, 315 LF ALONG PARCEL LINE. VERIFY PROPERTY LINES WITH SURVEY AS NEEDED.

REMOVE EXISTING (2) 48" RCP CULVERTS 38' ± LONG AND INLET PROTECTION

MONITORING WELL
N 720 361.07
E 2 316 471.70
EL 422.78 (TOP)

N 720 280.08 ±
E 2 316 327.53 ±

SURFACE ROUGHENING BY TRACKING PRIOR TO SEEDING (IUM CODE 953)

45° ±

EXISTING OFFSITE DITCH

EROSION CONTROL BLANKET
IUM-530

N 720 010.90 ±
E 2 315 273.91 ±

DUST CONTROL AND TEMPORARY SEEDING, TYPE 4B GRASSES IN DITCHES & FLOODPLAINS (TYP.) (IUM CODES 825 & 965)

WORK WITHIN ROSE CREEK AND ITS BANKS MAY BE PERFORMED AFTER HOLDS HAVE BEEN LIFTED. SEE C-202 FOR HOLDS.

ROSE CREEK

1 OUTFALL #2 AND ROSE CREEK EXCAVATION

29

NORTH 45TH STREET

COOKSON RD

KINGSHIGHWAY / IL RTE 111

GENERAL SHEET NOTES

1. GENERAL FILL CONTOURS ARE SHOWN LIGHT LINED (SHADED) AND PROPOSED SITE SUPPORT WORK AND FEATURES ARE SHOWN DARK LINED (NON-SHADED)
2. SEDIMENT BARRIER (TURBIDITY/ SILT FENCE/ CHECK DAM) IS REQUIRED AT IMMEDIATE DOWNSTREAM END OF ALL DISTURBED AREAS.
3. CONTRACTOR SHALL REMOVE SEDIMENT THAT IS ONE OR MORE FEET IN DEPTH AGAINST THE SEDIMENT BARRIER.
4. ALL CULVERTS AND CROSS DRAINS AFFECTED BY UPSTREAM WORK SHALL BE DESILTED ONCE UPSTREAM WORK IS COMPLETED. 1
5. CONTRACTOR WILL COORDINATE WITH SURROUNDING PROPERTIES CONTRACTOR FOR LOCATING POTENTIAL STOCKPILE AND/OR SPOIL PILES.

N

0 100 200 300
1"= 100'

NO.	DATE	REVISION	DR	CHK	APVD
1	02/13/19	REVISED FINAL DESIGN	R QUINNEY	R VAUGHAN	APVD
DSGN			R QUINNEY		

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

CIVIL

SITE SUPPORT INTERMEDIATE - SOUTH

REVISED FINAL DESIGN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING,
0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-204
SHEET	17 of 24

GENERAL SHEET NOTES

1. PROPOSED FACILITY AREA FEATURES AND TOP SOIL CONTOURS ARE SHOWN AS DARK LINED (NON-SHADED). (1)
2. PLACE TOPSOIL OVER THE SITE TO A DEPTH OF 6-INCHES ABOVE SUBGRADE (CLAY COVER AND GENERAL FILL) EXCEPT TO A DEPTH OF 12-INCHES ABOVE SUBGRADE OVER THE CONSOLIDATION AREA, TO TOE OF 10:1 SIDESLOPE (IUM CODE 981).
3. PERMANENT STABILIZATION SHALL BE BY SEEDING WITH IDOT CLASS 4 NATIVE GRASS MIX EXCEPT FOR DITCHES AND ELEVATIONS BELOW 416' WHERE CLASS 4B WETLAND GRASS & SEDGE MIX IS TO BE USED (IUM CODE 915).
4. MINIMUM EROSION PREVENTION AND SEDIMENT CONTROL MEASURES SHOWN SHALL REMAIN IN PLACE UNTIL 70% PERENNIAL VEGETATIVE COVER OR EQUIVALENT PERMANENT STABILIZATION HAS BEEN ACHIEVED.
5. FOR VALUE ENGINEERING OF MONITORING WELL INSTALLATION, COORDINATE INSTALLATION WITH SOIL BORINGS, AS APPLICABLE. MONITORING WELLS SHALL NOT BE LOCATED WITHIN RIGHT OF WAY. COORDINATE LOCATION WITH ENGINEER. (1)
6. CONTRACTOR WILL COORDINATE WITH SURROUNDING PROPERTIES CONTRACTOR FOR LOCATING POTENTIAL STOCKPILE AND/OR SPOIL PILES.

N

0 100 200 300

1"= 100'

COLLINSVILLE ROAD
NORTH 51ST STREET
NORTH 49TH STREET
NORTH 48TH STREET
NORTH 47TH STREET
NORTH 45TH STREET
WOODROW AVE.
KOENIGS MARK AVENUE
KINGSHIGHWAY / IL RTE 111

(1) RESTORE ANY REMOVED RIPRAP FROM CULVERT OUTLET OR HEADWALL.

OUTFALL # 1 (WEST DITCH 1) EXISTING 12 IN CMP CULVERT I.E. = 407.35

0.5 FT TOPSOIL EXCEPT IN DEFINED FLOW PATHS. TYPE 4B SEEDING. (IUM CODE 981 & 965)

34, SEE C-002, TYP.

PARCELS NOT OWNED BY XTRA INTERMODAL, INC. TYP. OBTAIN APPROPRIATE PERMISSIONS. (SEE C-002)

REMOVE TEMPORARY CHAIN LINK FENCE

STRAW BALE DITCH CHECK, TYP. (1) 3125-170

EROSION CONTROL BLANKET IUM-530

NEW MONITORING WELL (SEE NOTE 5)

N 722 389.00 ±
E 2 315 008.00 ±
EL = 422.5 (OR 3'± ABOVE GRADE)

NEW MONITORING WELL (SEE NOTE 5)
N 722 581.00 ±
E 2 316 079.00 ±
EL = 423.2 (OR 3'± ABOVE GRADE)

MW

(1) FENCE TRANSITION, TIE INTO EXISTING

GRASS LINED CHANNEL TYPICAL (IUM CODE 840) (2) C-502

(1) REPLACE CHAIN LINK FENCE 3231-410

REMOVE TEMPORARY CHAIN LINK FENCE

(1) REPLACE CHAIN LINK FENCE 3231-410

REPLACE FENCE 3231-410

TOP SOILING DUST CONTROL AND PERMANENT SEEDING, ENTIRE SITE SEE NOTES 2 AND 3 (IUM CODE: 981, 825, 965)

421.5 420.5 419.5 418.5 417.5 416.5 423.5 422.5

NO.	DATE	REVISION	DR	CHK	APVD
1	02/13/19	REVISED FINAL DESIGN	RQ	BY	APVD
DSGN	R QUINNEY	R QUINNEY	R VAUGHAN	M GAVIN	

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

ch2m

CIVIL

SITE SUPPORT
FINAL - NORTH

REVISED FINAL DESIGN

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT 1" ADJUST SCALE ACCORDINGLY

DATE	FEB 2019
PROJ	687729
DWG	C-205
SHEET	18 of 24

NORTH 45TH STREET

KINGSHIGHWAY / IL RTE 111

COOKSON RD

N 721 314.75 ±
E 2 315 288.56 ±

NEW MONITORING WELL (SEE NOTE 5)
N 721 043.00 ±
E 2 315 032.00 ±
Elev. 422.0 (OR 3'± ABOVE GRADE)

MW

TOP SOILING
DUST CONTROL
AND PERMANENT
SEEDING, ENTIRE SITE
SEE NOTES 2 AND 3
(IUM CODE: 981, 825, 965)

DUST CONTROL; STABILIZED CONSTRUCTION ENTRANCE (FINAL CONDITIONS)

N 721 314.41 ±
E 2 316 697.18 ±

GRASS LINED CHANNEL TYPICAL (IUM CODE 840)
2 C-502

STRAW BALE DITCH CHECK (TYPICAL)
3125-170

EXISTING EAST DITCH 1

INLET PROTECTION (FINAL CONDITIONS)
IL-508ST

EXISTING EAST DITCH 2

BM

N 720 663.68 ±
E 2 316 704.38 ±

28. OBTAIN PERMISSIONS (C-002), DITCH AND VEGETATION DISTURBANCE LIMITS MAY VARY. SHOWN LIMITS: 0.009 ACRES, 111 LF ALONG PARCEL LINE. VERIFY PROPERTY LINES WITH SURVEY AS NEEDED.

N 720 280.08 ±
E 2 316 327.53 ±

NEW MONITORING WELL (SEE NOTE 5)
N 720 342.00 ±
E 2 316 462.00 ±
EL = 418.0 (OR 3'± ABOVE GRADE)

MW

N 720 010.90 ±
E 2 315 273.91 ±

EROSION CONTROL BLANKET
IUM-530

NEW FLOW PATH TO ROSE CREEK

EXISTING ROSE CREEK

OUTFALL #2 AND ROSE CREEK EXCAVATION

INLET PROTECTION
IL-508ST

GENERAL SHEET NOTES

1. PROPOSED FACILITY AREA FEATURES AND TOP SOIL CONTOURS ARE SHOWN SHOWN AS DARK LINED (NON-SHADED).
2. PLACE TOPSOIL OVER THE SITE TO A DEPTH OF 6-INCHES ABOVE SUBGRADE (CLAY COVER AND GENERAL FILL) EXCEPT TO A DEPTH OF 12-INCHES ABOVE SUBGRADE OVER THE CONSOLIDATION AREA, TO TOE OF 10:1 SIDESLOPE (IUM CODE 981).
3. PERMANENT STABILIZATION SHALL BE BY SEEDING WITH IDOT CLASS 4 NATIVE GRASS MIX EXCEPT FOR DITCHES AND ELEVATIONS BELOW 416' WHERE CLASS 4B WETLAND GRASS & SEDGE MIX IS TO BE USED. (IUM CODE 915)
4. MINIMUM EROSION PREVENTION AND SEDIMENT CONTROL MEASURES SHOWN SHALL REMAIN IN PLACE UNTIL 70% PERRENIAL VEGETATIVE COVER OR EQUIVALENT PERMANENT STABILIZATION HAS BEEN ACHEIVED.
5. MONITORING WELLS SHALL NOT BE LOCATED WITHIN RIGHT OF WAY. COORDINATE LOCATION WITH ENGINEER. 1
6. CONTRACTOR WILL COORDINATE WITH SURROUNDING PROPERTIES CONTRACTOR FOR LOCATING POTENTIAL STOCKPILE AND/OR SPOIL PILES.

N

0 100 200 300
1"= 100'

NO.	DATE	REVISION	CHK
1	02/13/19	REVISED FINAL DESIGN	RQ MG
			BY APVD
DSGN	R QUINNEY	DR R QUINNEY	CHK R VAUGHAN APVD M GAVIN

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

CIVIL

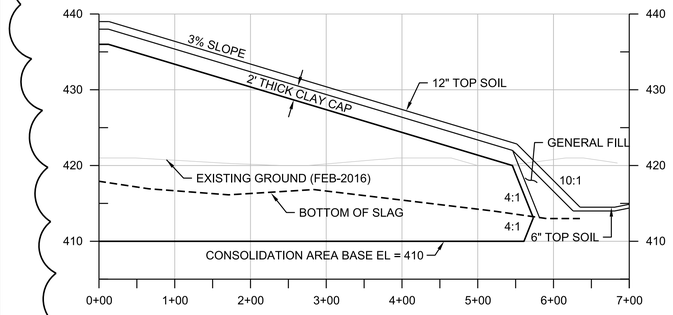
SITE SUPPORT
FINAL - SOUTH

REVISED FINAL DESIGN

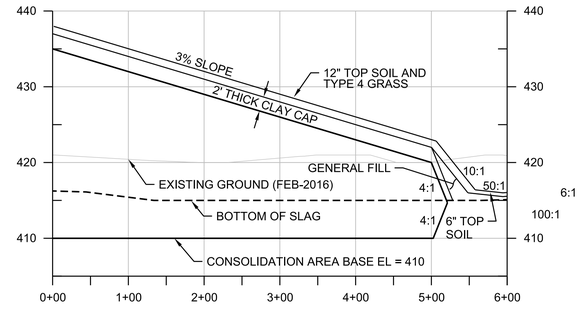
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-206
SHEET	19 of 24

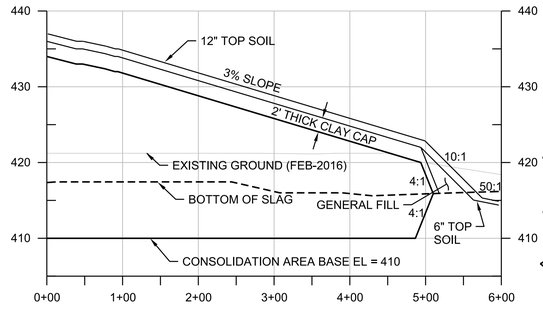
$PWURL $PWPATH FILENAME: 005-C-2006_687729.dgn PLOT DATE: 2/22/2019 PLOT TIME: 2:05:10 PM



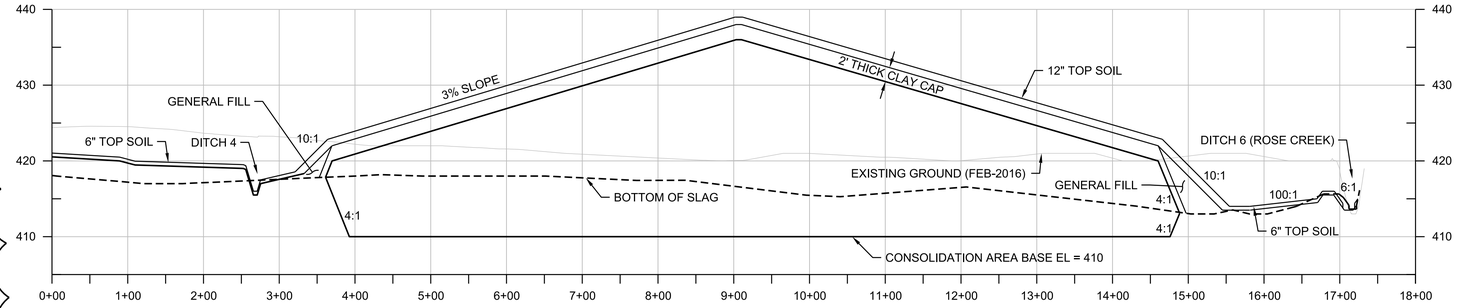
SECTION C-C



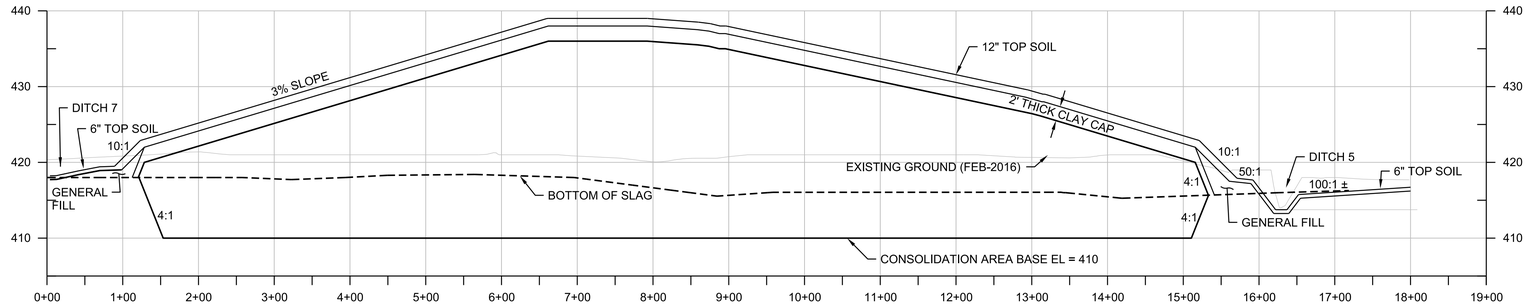
SECTION D-D



SECTION E-E



SECTION B-B



SECTION A-A

1"= 10'

1"= 100'

					RQ	MG
					BY	APVD
1	02/13/19	REVISED FINAL DESIGN				M GAVIN
NO.	DATE	REVISION	DR	CHK	APVD	
DSGN	R QUINNEY	R QUINNEY	R QUINNEY	R VAUGHAN	R VAUGHAN	

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

ch2m

CIVIL

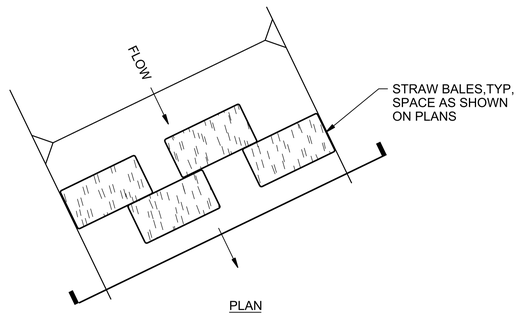
CONSOLIDATION AREA SECTIONS

VERIFY SCALE

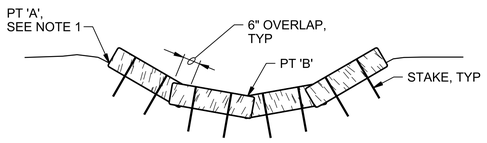
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-301
SHEET	20 of 24

REVISED FINAL DESIGN



PLAN



SECTION

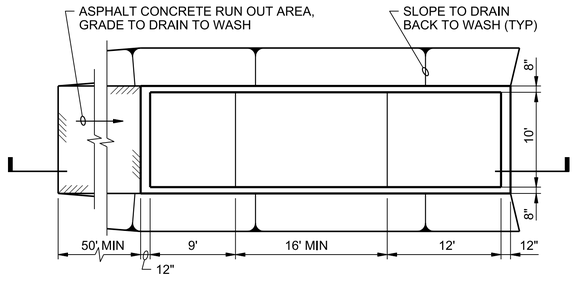
NOTES:

1. POINT 'A' MUST BE 6" MINIMUM HIGHER THAN PT 'B'.
2. STAKING OF BALES IS REQUIRED USING (2)2"x2"x3' LONG WOOD STAKES OR APPROVED EQUAL PER BALE.
3. DRIVE STAKES MINIMUM 12" INTO GROUND AND FLUSH WITH TOP OF BALES.
4. EMBED BALES MINIMUM OF 4" INTO GROUND SURFACE EXCEPT WHERE GEOSYNTHETIC FABRIC OR EROSION CONTROL BLANKETS ARE INSTALLED.

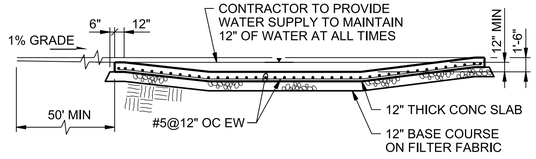
STRAW BALES IN DITCHES

NTS

3125-170



PLAN



SECTION

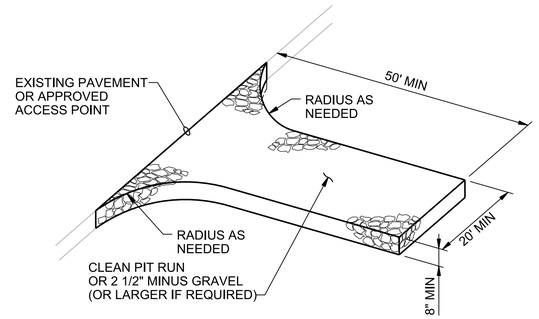
NOTE:

CONTRACTOR TO REMOVE ACCUMULATED SEDIMENT FROM WHEEL WASH, MAY BE PIPED TO AN APPROVED SEDIMENT TRAP.

WHEEL WASH

NTS

3125-135



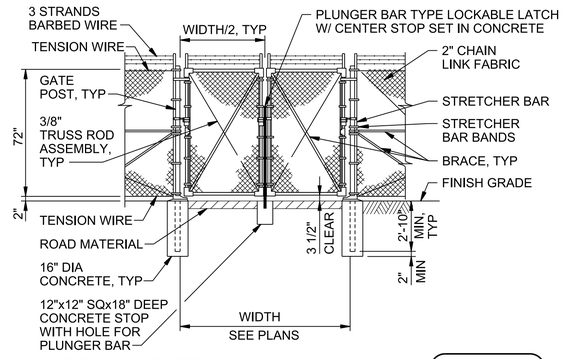
ADDITIONAL GRAVEL MAY HAVE TO BE ADDED PERIODICALLY TO MAINTAIN PROPER FUNCTION OF THE PAD.

REMOVE GRAVEL ENTRANCE AND REPLACE WITH NEW BASE COURSE PRIOR TO COMPLETION OF PROJECT.

GRAVEL CONSTRUCTION EXIT

NTS

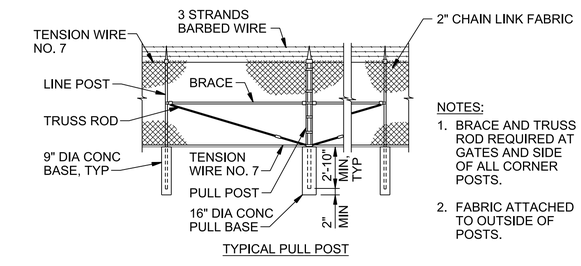
3125-130



DOUBLE SWING GATE

NTS

3231-415

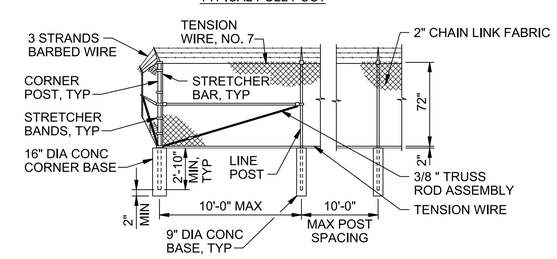


LINE POST CONNECTION TOP RAIL CONNECTION

NOTES:

1. BRACE AND TRUSS ROD REQUIRED AT GATES AND SIDE OF ALL CORNER POSTS.
2. FABRIC ATTACHED TO OUTSIDE OF POSTS.

TYPICAL PULL POST

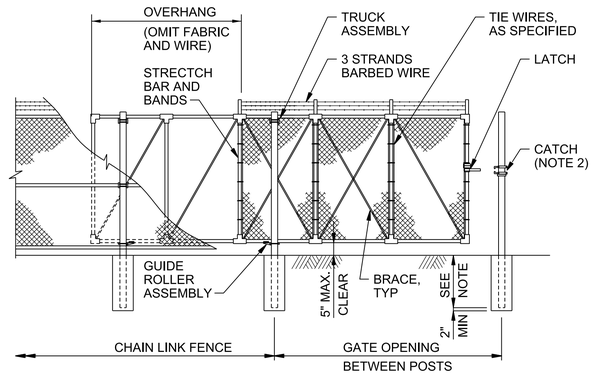


TYPICAL CORNER POST

CHAIN LINK FENCE

NTS

3231-410



NOTES:

1. POST SETS PER MANUFACTURER'S RECOMMENDATIONS FOR GATE OPENING AND GATE POST SIZES.
2. FOR DOUBLE GATE, THE CATCH SHALL BE ON OPPOSITE GATE, AS APPLICABLE.

CANTILEVER SLIDE GATE

NTS

3231-425

NO.	DATE	REVISION	BY	APVD
1	02/13/19	REVISED FINAL DESIGN	RQ	MG

DSGN R. QUINNEY DR R. QUINNEY CHK R. VAUGHAN APVD M. GAVIN

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

ch2m

CIVIL

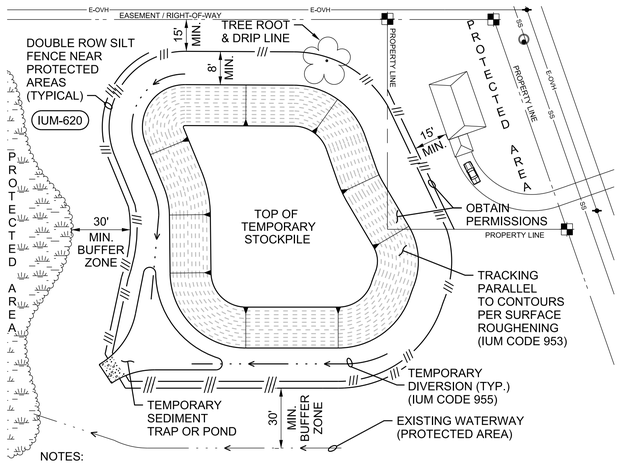
DETAILS - 01

REVISED FINAL DESIGN

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-501
SHEET	21 of 24

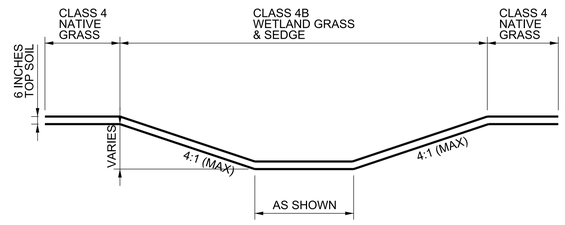


NOTES:

1. STOCKPILE SLOPES SHALL NOT EXCEED ANGLE OF REPOSE OF SOIL MATERIAL.
2. SEED STOCKPILES WITHIN 7 DAYS IF IT IS TO REMAIN DORMANT OVER 30 DAYS. (IUM CODES 981 AND 965)
3. DO NOT LOCATE STOCKPILE WITHIN DRAINAGE FLOW PATHS, DRIP LINE, OR OVER THE ROOT CROWN OF ADJACENT TREES, OR ON IMPERVIOUS SURFACES.
4. STOCKPILE BUFFERS: 30 FT MINIMUM TO PROTECTED AREAS (I.E. WETLANDS) AND DRAINAGE DITCHES; 15 FT MINIMUM TO BUILDINGS, ROADS, UTILITY EASEMENTS, ETC.
5. HAUL ROADS AND ENTRANCES TO STOCKPILE OR OTHER AREAS SUSCEPTIBLE TO CONCENTRATED FLOW SHALL HAVE SEDIMENT CONTROL PROVISIONS.
6. OBTAIN PERMISSIONS AS APPROPRIATE IF STOCKPILING ON ADJACENT PROPERTIES. DO NOT COVER SURVEY BENCHMARKS OR MONITORING WELLS WITHOUT PRIOR AUTHORIZATION.

1 TYPICAL STOCKPILE

NTS



2 TYPICAL GRASS-LINED CHANNEL

NTS

C-107
C-108

NO.	DATE	REVISION	DR	CHK	APVD
1	02/13/19	REVISED FINAL DESIGN	RQ	BY	MG
DSGN	R. QUINNEY	R. QUINNEY	R VAUGHAN		APVD
DR	R. QUINNEY				M GAVIN

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

REVISED FINAL DESIGN

CIVIL

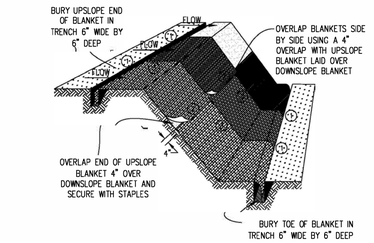
DETAILS - 02

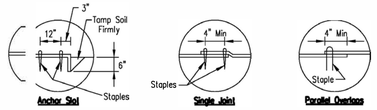
VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING, IF NOT ADJUST SCALE ACCORDINGLY

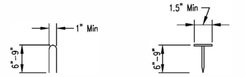
0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-502
SHEET	22 of 24





DETAIL 1 DETAIL 2 DETAIL 3



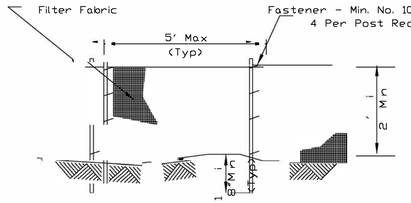
STAPLE DETAIL PUSH PIN DETAIL

NOTES:

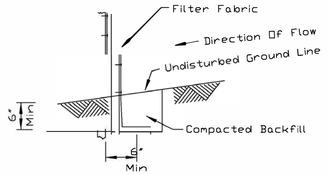
1. Staples shall be placed in a diamond pattern at 2 per s.y. for stiched blankets. Non-stiched shall use 4 staples per s.y. of material. This equates to 200 staples with stiched blanket and 400 stapels with non-stiched blanket per 100 s.y. of material.
2. Staple or push pin lengths shall be selected based on soil type and conditions. (minimum staple length is 6")
3. Erosion control material shall be placed in contact with the soil over a prepared seedbed.
4. All anchor slots shall be stapled at approximately 12" intervals.

EROSION CONTROL BLANKET INSTALLATION DETAILS

SILT FENCE PLAN



ELEVATION



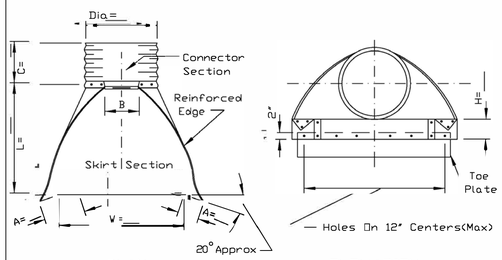
FABRIC ANCHOR DETAIL

NOTES:
1. Temporary sediment fence shall be installed prior to any grading work in the area to be protected. They shall be maintained throughout the construction period and removed in conjunction with the final grading and site stabilization.
2. Filter fabric shall meet the requirements of material specification 592 Geotextile Table 1 or 2, Class I with equivalent opening size of at least 30 for nonwoven and 40 for woven.
3. Fence posts shall be either standard steel post or wood post with a minimum cross-sectional area of 3.0 sq. in.

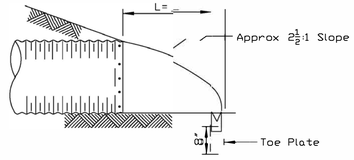
REFERENCE Project Designed Date Checked Date Approved Date

STANDARD DWG. NO. IUM-620 SHEET 1 OF 2 DATE 3-16-12

CULVERT FLARED END SECTION



PLAN ELEVATION



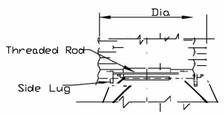
TYPICAL CROSS SECTION

REFERENCE Project Designed Date Checked Date Approved Date

NRCS Natural Resources Conservation Service

STANDARD DWG. NO. IL-545 SHEET 1 OF 2 DATE 3-1-95

CULVERT FLARED END SECTION



ALTERNATE CONNECTION

PIPE DIA	SHEET THICKNESS	DIMENSIONS A ✱ 1"	B MAX	H ✱ 1"	L ✱ 1 1/2"	W ✱ 2"	C
12"	.064"	6"	6"	6"	21"	24"	24"
15"	.064"	7"	8"	6"	26"	30"	24"
18"	.064"	8"	10"	6"	31"	36"	24"
24"	.064"	10"	13"	6"	41"	48"	24"
30"	.079"	12"	16"	8"	51"	60"	24"
36"	.079"	14"	19"	9"	60"	72"	36"
42"	.109"	16"	22"	11"	69"	84"	36"
48"	.109"	18"	27"	12"	78"	90"	24"
54"	.109"	18"	30"	12"	84"	102"	36"
60"	.109"-.138"	18"	33"	12"	87"	114"	36"

✱ = Tolerance

NOTES:
1. Toe plate, where needed, to be punched to match holes in skirt lip. 3/8" galv, bolts to be furnished. Length of toe plate is W+10" for 12" to 30" dia. pipe and W+22" for 36" to 60" dia. pipe.
2. Skirt section for 12" to 30" dia. pipe to be made in one piece.
3. Skirt section for 36" to 54" pipe to be made from two sheets joined by riveting or bolting on center line, 60" may be constructed in 3 pieces.
4. Connector section, corner plate and toe plate to be same sheet thickness as skirt.
5. End sections and fittings are to be galvanized steel or aluminum alloy for use with like pipe.
6. Where flared end sections are to be used with bituminous coated and paved metal pipe, they are to be galvanized only.

REFERENCE Project Designed Date Checked Date Approved Date

NRCS Natural Resources Conservation Service

STANDARD DWG. NO. IL-545 SHEET 2 OF 2 DATE 3 1 95

NO.	DATE	DSGN	DR	CHK	APVD
1	02/19/19	REVISED FINAL DESIGN			
		R. QUINNEY	R. QUINNEY	R. UGHAN	M'GAVNA

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FAÇILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

ch2m. CIVIL

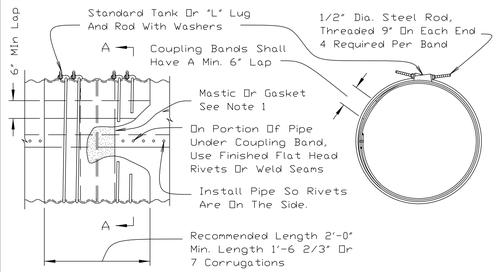
DETAILS - 03

REVISED FINAL DESIGN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 1"

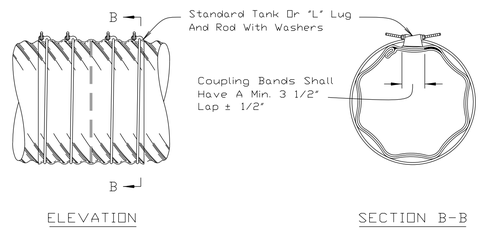
DATE FEB 2019
PROJ 687729
DWG C-503
SHEET 23 of 24

COUPLING BANDS FOR CORRUGATED METAL PIPE



ELEVATION SECTION A-A

WATER TIGHT COUPLING BAND FOR ANNULAR PIPE



ELEVATION SECTION B-B

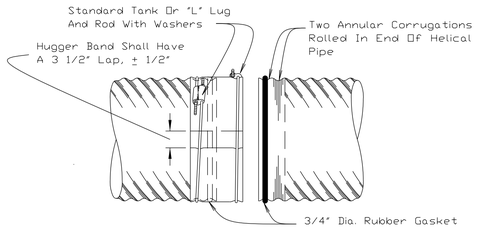
HELICAL CORRUGATED COUPLING BAND

REFERENCE
Project
Designed _____ Date _____
Checked _____ Date _____
Approved _____ Date _____

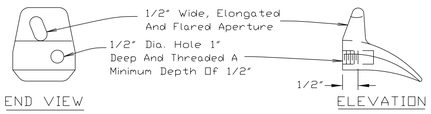
NRCS Natural Resources Conservation Service

STANDARD DWG. NO. IL-580
SHEET 1 OF 2
DATE 7-25-94

COUPLING BANDS FOR CORRUGATED METAL PIPE



WATER TIGHT HUGGER TYPE COUPLING BAND



END VIEW ELEVATION

ALTERNATE "L" LUG

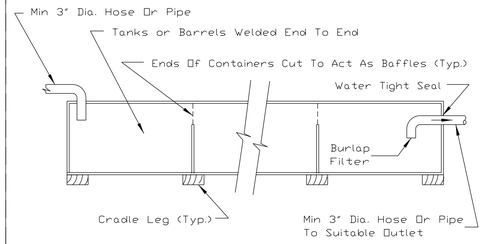
NOTES:
1. The Pipe Ends Covered By A Coupling Band And The Lap Seam Shall Be Coated With Bituminous Mastic. A Neoprene Gasket May Be Used In Lieu Of The Bituminous Mastic. The Gasket Size Shall Be 3/8" Thick With A Minimum Width Of 7" Centered On The Pipe Joint And Fastened At The Ends To Form A Full Circle.
2. Materials and coatings of watertight coupling bands, sleeve joints and helical metal bands shall be the same as that specified for the pipe.
3. All tank lugs, rods, and nuts shall be galvanized steel. Where aluminum bands are used, the rod and lugs shall be separated from the aluminum by at least two (2) layers of plastic tape with a total thickness of 24 mils or more.
4. Corrugated metal coupling bands may be fabricated from one or two pieces with equal minimum lap lengths.

REFERENCE
Project
Designed _____ Date _____
Checked _____ Date _____
Approved _____ Date _____

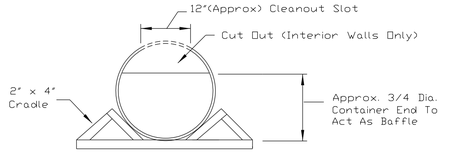
NRCS Natural Resources Conservation Service

STANDARD DWG. NO. IL-580
SHEET 2 OF 2
DATE 7-25-94

PORTABLE SEDIMENT TANK PLAN



SECTION ON CENTERLINE



TYPICAL SECTION A-A

NOTES:
1. Clean out the sediment tank when one-third filled with sediment.
2. Steel drums are used as an example due to their ready availability. Any tanks may be used, providing that the volume requirements are met.
3. All sediment collected in the tank shall be disposed of in a sediment trapping device or as approved by the engineer/inspector.

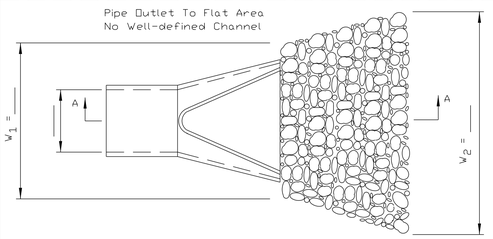
Volume required in tank: _____ cubic feet.

REFERENCE
Project
Designed _____ Date _____
Checked _____ Date _____
Approved _____ Date _____

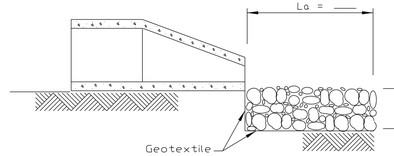
NRCS Natural Resources Conservation Service

STANDARD DWG. NO. IL-595
SHEET 1 OF 1
DATE 3-3-95

PIPE OUTLET TO FLAT AREA



PLAN



SECTION A-A

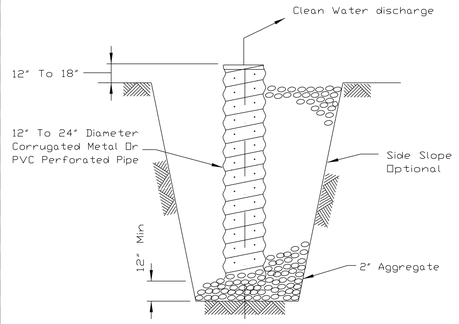
NOTES:
1. The filter fabric shall meet the requirements in material specifications 592 GEOTEXTILE Table 1 or 2, class I, II or III.
2. The rock riprap shall shall meet the IDOT requirements for the following gradation: RR _____, Quality _____.
3. The riprap shall be placed according to construction specification 61 LOOSE ROCK RIPRAP. The rock may be equipment placed.

REFERENCE
Project
Designed _____ Date _____
Checked _____ Date _____
Approved _____ Date _____

NRCS Natural Resources Conservation Service

STANDARD DWG. NO. IL-610
SHEET 1 OF 1
DATE 9-15-93

SUMP PIT PLAN



SECTION

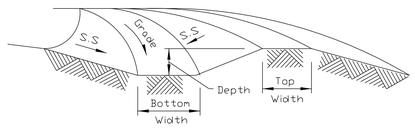
NOTES:
1. Pit dimensions are optional.
2. The standpipe will be constructed by perforating a 12"-24" diameter corrugated metal or PVC pipe.
3. A base of 2" aggregate will be placed in the pit to a minimum depth of 12". After installing the standpipe, the pit surrounding the standpipe will then be backfilled with 2" aggregate.
4. The standpipe will extend 12" to 18" above the lip of the pit.
5. If discharge will be pumped directly to a storm drainage system, the standpipe will be wrapped with filter fabric before installation.
6. If desired, 1/4"-1/2" hardware cloth may be placed around the standpipe prior to attaching the filter fabric. This will increase the rate of water seepage into the pipe.

REFERENCE
Project
Designed _____ Date _____
Checked _____ Date _____
Approved _____ Date _____

NRCS Natural Resources Conservation Service

STANDARD DWG. NO. IL-650
SHEET 1 OF 1
DATE 8-11-94

TEMPORARY DIVERSION PLAN



Diversion No.			
From Station			
To Station			
Design Data			
Grade, %			
Drainage Area, Ac			
Construction Layout Data			
Bottom Width, Ft.			
Depth, Ft.(Includes Freeboard & Settlement)			
Side Slopes, Ft./Ft.			
Top Width (Berm), Ft.			
Seeding Width, Ft.			
Seeding Area, Sq.Ft.			

NOTES:
1. All trees stumps, brush and debris shall be removed from the construction area and disposed of properly. All obstructions that will interfere with construction or operation shall be removed. All ditches or gullies to be crossed shall be filled in prior to construction or as part of construction operations.
2. When required topsoil shall be salvaged and spread uniformly over disturbed areas.
3. The diversion will be constructed to the specified lines, grades, width and depth.

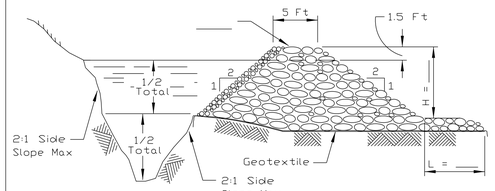
Notes: _____

REFERENCE
Project
Designed _____ Date _____
Checked _____ Date _____
Approved _____ Date _____

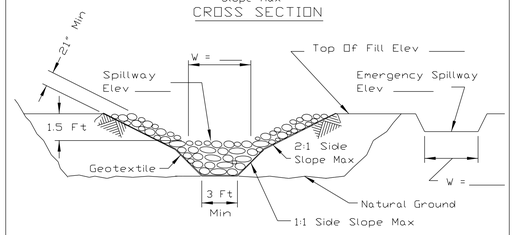
NRCS Natural Resources Conservation Service

STANDARD DWG. NO. IL-655
SHEET 1 OF 1
DATE 11-21-01

TEMPORARY SEDIMENT TRAP



CROSS SECTION



STONE SECTION

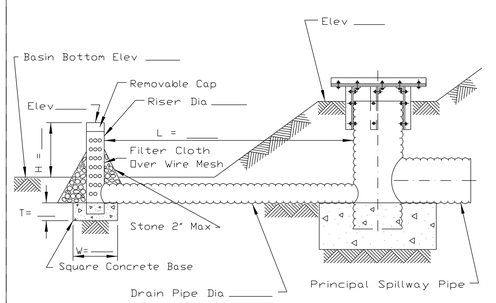
NOTES:
1. If the sediment pool is formed or enlarged the side slope will be 2:1 or flatter.
2. The fill shall be constructed using IDOT RR-4 stone size. A 1'layer of IDOT CA-2 should be placed on the inside face to reduce the flow rate.
3. The rock will be placed according to construction specification 25 ROCKFILL. Placement will be by Method 1 and compaction will be class III.
4. The geotextile shall meet the requirements in material specification 592 GEOTEXTILE table 1 or 2, class I, II or IV.

REFERENCE
Project
Designed _____ Date _____
Checked _____ Date _____
Approved _____ Date _____

NRCS Natural Resources Conservation Service

STANDARD DWG. NO. IL-660
SHEET 1 OF 1
DATE 11-20-01

SEDIMENT BASIN DEWATERING DEVICE



SECTION ON CENTERLINE

NOTES:
1. Slotted inlets shall be fabricated from corrugated metal or smooth steel.
2. Slots shall be cut cleanly and deburred. Ends of slots may be round or square.
3. Gravel filter, if used, shall be pit run sand and gravel with a maximum particle diameter of 2".
4. Fabricated or standard elbow; fabricated or standard tee with the pipe or plug in upstream end; or standard tee with one end embedded in concrete.
5. Thirty 1" diameter holes per foot of riser may be substituted for the 1"x 4" slots for 6" diameter risers.
6. Drain pipe shall be the same material and gauge as the principle spillway pipe.
7. Slot spacing and size shall be as shown on standard drawing IL-580.
8. Coupling bands shall be as shown on standard drawing IL-580.

REFERENCE
Project
Designed _____ Date _____
Checked _____ Date _____
Approved _____ Date _____

NRCS Natural Resources Conservation Service

STANDARD DWG. NO. IL-615
SHEET 1 OF 1
DATE 9-22-93

NO.	DATE	REVISION	BY	APVD
1	02/13/19	REVISED FINAL DESIGN	RQ	MG

DSGN R. QUINNEY DR R. QUINNEY CHK R. VAUGHAN APVD M GAVIN

US EPA
OLD AMERICAN ZINC PLANT SUPERFUND SITE
FACILITIES AREA DESIGN
FAIRMONT CITY, ILLINOIS

ch2m

CIVIL

DETAILS - 04

REVISED FINAL DESIGN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2019
PROJ	687729
DWG	C-504
SHEET	24 of 24

Appendix G has been removed from this document entirely to protect personally identifiable information. For more information, please contact the EPA Work Assignment Manager, Sheila Desai, at (312) 353-4150.

Appendix H
Agency Consultation

Cultural Resources Literature Review for the Old American Zinc Plant Superfund Site Madison and St. Clair Counties, Illinois

WA No. **224-RDRD-B5A1**/Contract No. EP-S5-06-01

Prepared for

July 2018

ch2m

Executive Summary

On behalf of the U.S. Environmental Protection Agency (EPA), CH2M HILL, Inc. (CH2M), conducted a cultural resources literature review for the Old American Zinc (OAZ) Plant Superfund Site (Project) in Madison and St. Clair Counties, Illinois. The Project, encompassing approximately 503.49 hectares (1,244.14 acres), including the 63-hectare (156-acre) OAZ facility, is situated within the community of Fairmont City, Illinois. While the site is defined as the 503.49-hectare (1,244.14 acre) area of properties surrounding the OAZ facility, select properties, primarily west and southwest of the facility, will be subject to soil sampling and removals to remediate contaminated areas, which are deemed an imminent human health hazard, by EPA.

The project consists of taking soil samples using a 3- to 3.5-inch hand auger, from the top 24 inches of ground surface at select residential properties within the Village of Fairmount City, to test for zinc, arsenic, cadmium, and lead. Residences found to have elevated levels of these metals are in turn proposed to be mitigated by excavating contaminated soil and backfilling the impacted area with clean soil. At the base of excavations completed to the maximum sampling depth (i.e. 18 inches for properties sampled during the time critical removal action investigation and 24 inches for all other properties), XRF screening will be done to assess whether contaminants are still present in the soils. If contaminants are present above acceptable levels, excavations will resume to a depth of 30 inches. If contaminants are present at 30 inches below ground surface, demarcation fabric will be placed at that depth. To date, the design and project plan for removal and remediation of contaminated soils has not been completed, although an emergency action is being completed at some properties with elevated concentrations of the metals. These actions are being undertaken by EPA pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 United States Code Section 9601 et seq. (Superfund). As such, this project is subject to review under the National Historic Preservation Act of 1966, as amended, and the regulations (36 *Code of Federal Regulations* Part 800) outlined by the Advisory Council on Historic Preservation. The EPA is the lead federal agency.

CH2M conducted a records search between June 15 and 22, 2018, using the Illinois Historic Preservation Agency Cultural Resources Management Report Archive, the Illinois Archaeology Survey (IAS) Inventory of Archaeological Sites (Illinois Site Geographic Information System), and the Historic Architectural Resource Geographic Information System (HARGIS) to identify previously recorded cultural resources and/or investigations in or near the Project area. The literature review revealed that one National Historic Landmark (NHL) and National Register of Historic Places (NRHP)-listed resource, one United Nations Educational, Scientific, and Cultural Organization (UNESCO) World Heritage Site, 59 IAS-listed archaeological sites, six resources that have been determined eligible for listing in the NRHP, 22 IAS-listed mound sites, 26 HARGIS-listed resources, and one IAS-listed cemetery have been inventoried within 1.6 kilometers (one mile) of the project. Additionally, at least 60 previous cultural resources investigations have been documented within 1.6 kilometers (one mile) of the project. Of the cultural resources inventoried within the study area, one NHL and NRHP-listed resource, six IAS-listed archaeological sites, three IAS-listed mound sites, one HARGIS-list resource, and 16 of the previous cultural resources investigations are located within the project area.

The most significant of these resources within the project area is the Cahokia Mounds site, which was listed as an NHL in 1964, and placed on the NRHP in 1966 (NR 66000899; 11MS2 and 11S34). The Cahokia Mounds site is one of the most prominent archaeological sites in North America. Two site numbers have been assigned to Cahokia Mounds (11MS2 and 11S34), and each of the sites has been further divided into 24 “site divisions.” Portions of eight of the 24 Cahokia Mound site divisions fall within the project area. Cahokia is also a UNESCO World Heritage Site. The parcels currently included in the remediation plan are located outside of the current UNESCO World Heritage Site boundaries. The remaining archaeological

resources within the project area are composed of Late Woodland through Mississippian period habitation sites, resulting from the region's heavy utilization during these periods.

Numerous and sometimes complex prehistoric and historic sites have been identified within and near the project area. Review of previously identified archaeological sites and historic mapping indicate a high probability of both prehistoric and historic archaeological deposits to be located in the Project's vicinity.

Contents

Tables

Figures

Acronyms and Abbreviations

A.D.	Anno Domini
CH2M	CH2M HILL, Inc.
CRM	Cultural Resources Management
EPA	U.S. Environmental Protection Agency
EWP	East West Project
GIS	Geographic Information System
HARGIS	Historic Architectural Resource Geographic Information System
HSRPA	Human Skeletal Remains Protection Act
IAS	Illinois Archaeology Survey
ID	identification
IHPA	Illinois Historic Preservation Agency
NHL	National Historic Landmark
NRHP	National Register of Historic Places
OAZ	Old American Zinc
UNESCO	United Nations Educational, Scientific, and Cultural Organization

SECTION 1

Introduction

On behalf of the U.S. Environmental Protection Agency (EPA), CH2M HILL, Inc. (CH2M) conducted a cultural resources literature review for the proposed Old American Zinc (OAZ) Superfund Project (Project) in Madison and St. Clair Counties, Illinois. The project encompasses approximately 503.49 hectares (1,244.14 acres), including the 63-hectare (156-acre) OAZ facility, within the Village of Fairmont City, Illinois (Figures 1.1 and 1.2). While the project area is defined as the 503.49-hectare (1,244.14 acre) area of properties surrounding the OAZ facility, select properties will be subject to soil sampling and removals to remediate contaminated areas, which are deemed an imminent human health hazard, by EPA.

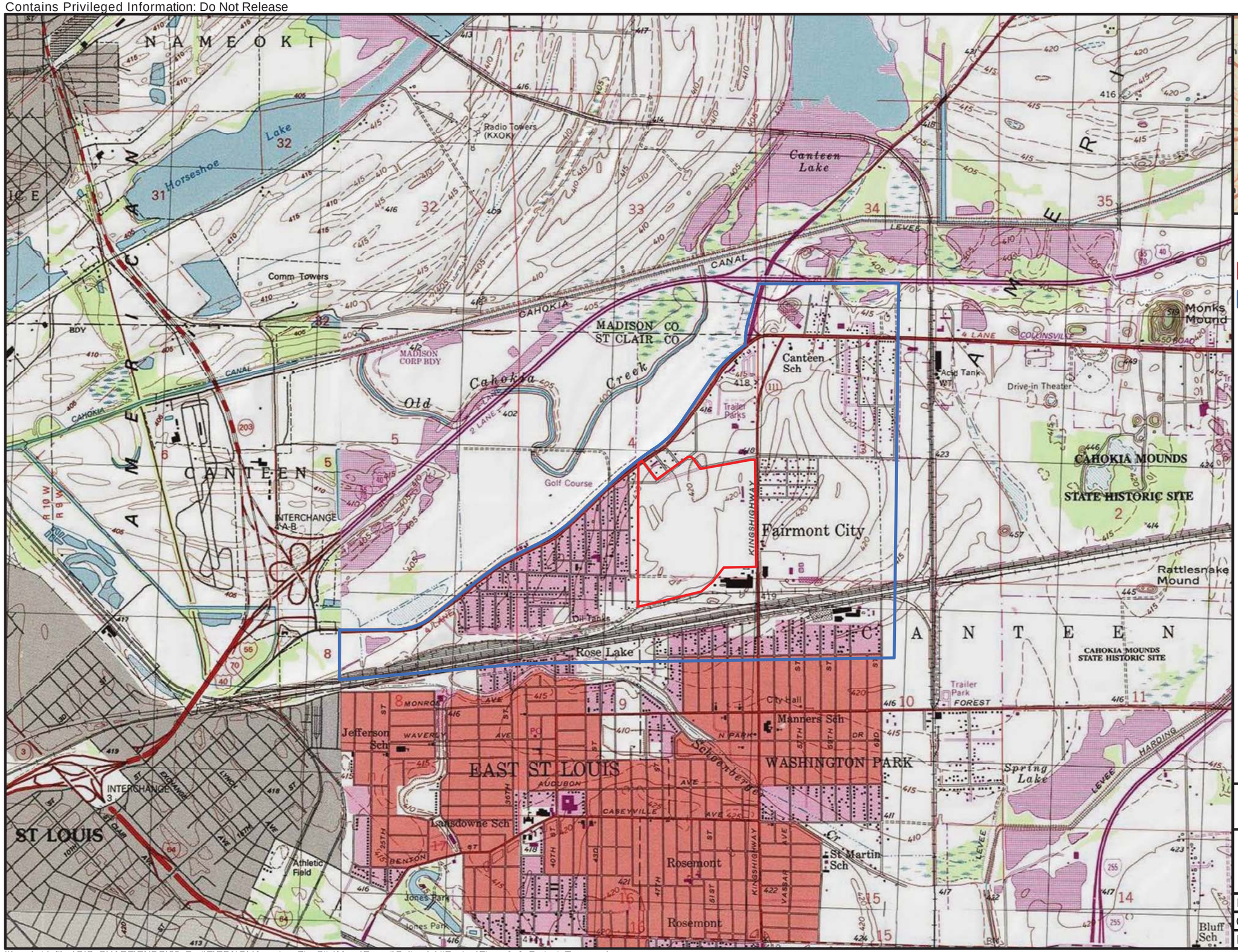
The project consists of taking soil samples using a 3- to 3.5-inch hand auger, from the top 24 inches of ground surface at select residential properties within the Village of Fairmount City, to test for zinc, arsenic, cadmium, and lead. Residences found to have elevated levels of these metals are in turn proposed to be mitigated by excavating contaminated soil and backfilling the impacted area with clean soil. At the base of excavations completed to the maximum sampling depth (i.e. 18 inches for properties sampled during the time critical removal action investigation and 24 inches for all other properties), XRF screening will be done to assess whether contaminants are still present in the soils. If contaminants are present above acceptable levels, excavations will resume to a depth of 30 inches. If contaminants are present at 30 inches below ground surface, demarcation fabric will be placed at that depth. To date, the design and project plan for removal and remediation of contaminated soils has not been completed, although an emergency action is being completed at some properties with elevated concentrations of the metals. These actions are being undertaken by EPA pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 United States Code. Section 9601 et seq. (Superfund). As such, this project is subject to review under the National Historic Preservation Act of 1966, as amended, and the regulations (36 *Code of Federal Regulations* Part 800) outlined by the Advisory Council on Historic Preservation. EPA is also the lead federal agency.

CH2M conducted a records search between June 15 and 22, 2018, using the Illinois Historic Preservation Agency Cultural Resources Management (CRM) Report Archive, the Illinois Archaeology Survey (IAS) Inventory of Archaeological Sites (Illinois Site Geographic Information System [GIS]), and the Historic Architectural Resource Geographic Information System (HARGIS) to identify previously recorded cultural resources and/or investigations in or near the project area. CH2M gathered information about previously conducted cultural resource investigations and inventoried cultural resources around the project area.

Key personnel committed to the project include Principal Investigator Amy C. Favret and Field Directors Kyle Spurgeon and April Greenberg. Ms. Favret served as principal investigator and report co-author. Mr. Spurgeon conducted the records search, served as report co-author. Ms. Greenberg contributed to report graphics.

Section 2 of this report presents the results of the literature review. Section 3 discusses the results and presents the conclusions and recommendations. Section 4 contains the references cited in this report.

Contains Privileged Information: Do Not Release



LEGEND:

- OAZ Facility Boundary
- Surrounding Properties Boundary (Approximate)

BASE MAP SOURCE:
USGS 7.5-minute Topographic Quadrangles: Granite City, IL (published 1983) and Monks Mound, IL (published 1974)

N

0 610 1,220
Scale in Meters

0 2,000 4,000
Scale In Feet

Old American Zinc Plant Superfund Site
Fairmont City, Illinois

FIGURE 1.1
PROJECT OVERVIEW

PN: 687729	DATE: 7/2/2018
CREATED BY: AG	ch2m
REVIEWED BY: AF	

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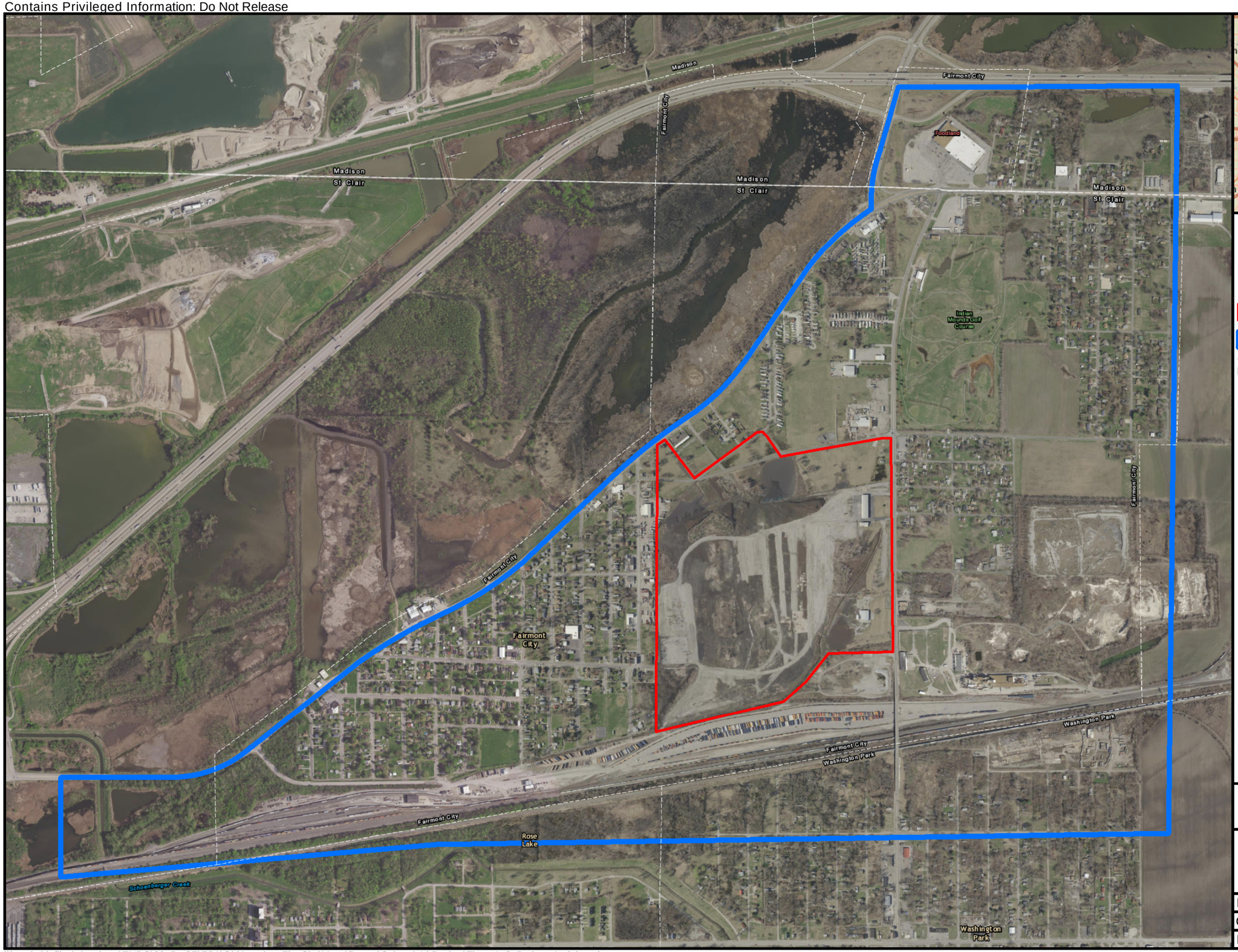

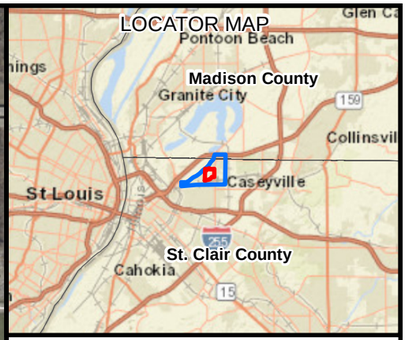

LEGEND:

- Facility Area Boundary
- Surrounding Properties Boundary (Approximate)
- County or City Boundary

BASE MAP SOURCE:
ESRI World Imagery Layer, 2015

N

0 305 610
Scale in Meters

0 1,000 2,000
Scale In Feet

Old American Zinc Plant Superfund Site
Fairmont City, Illinois

FIGURE 1.2
PROJECT OVERIEW ON
AN AERIAL MAP

PN: 687729	DATE: 8/7/2018
CREATED BY: AG	ch2m.
REVIEWED BY: AF	

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SECTION 2

Literature Review

CH2M conducted background research using the Illinois Historic Preservation Agency CRM Report Archive, Illinois Site GIS, and HARGIS to identify previously recorded cultural resources and/or investigations in or near the project Area of Potential Effects (APE). These databases were consulted between June 15 and 22, 2018. A 1.6-kilometer (one-mile) buffer (study area) was used to identify previously recorded cultural resources and to provide information on the probability of identifying cultural resources within the APE. For the literature review, the following resources were consulted:

- National Historic Landmarks List (NHL)
- National Register of Historic Places (NRHP)
- UNESCO World Heritage Site List
- IAS Inventory of Archaeological Sites
- IAS Inventory of Mound Sites
- Illinois Historic and Architectural Resources (HARGIS)
- Illinois State Museum (ISM) Cemeteries
- IAS Cemeteries
- Previous CRM reports
- County historic maps

Based a review of the records available through the online mapping databases, one NHL and NRHP-listed resource, one UNESCO World Heritage Site, 59 IAS-listed archaeological sites, six resources that have been determined eligible for listing in the NRHP, 22 IAS-listed mound sites, 26 HARGIS-listed resources, and one IAS-listed cemetery have been inventoried within 1.6 kilometers (one mile) of the project (Figures 2.1 through 2.5). Additionally, at least 60 previous cultural resources investigations have been documented within 1.6 kilometers (one mile) of the project. Of the cultural resources inventoried within the study area, one NHL and NRHP-listed resource, six IAS-listed archaeological sites, three IAS-listed mound sites, one HARGIS-list resource, and 16 of the previous cultural resources investigations are located within the project area.

2.1 National Historic Landmarks and National Register of Historic Places

One NRHP-listed and NHL-listed project property is documented within 1.6 kilometers (one mile) of the project (Figure 2.1). The Cahokia Mounds site was listed as an NHL in 1964 and placed on the NRHP in 1966 (NR 66000899; 11MS2 and 11S34). The Cahokia Mounds site is one of the most significant and intensely studied archaeological sites in North America. Spanning more than 4,000 acres at the height of its occupation, the site is the largest expression of a Mississippian period settlement and mound complex (Aten and Bond 1974). The area was initially occupied during the Late Woodland period (Anno Domini [A.D.] 600-800) as observed from the Patrick Phase material recovered from the site. Near A.D. 900, the region's inhabitants began to develop into the Mississippian culture, and through A.D. 1050 (Fairmont Phase), mound construction, elaborate burials, social stratification, and the first Cahokia city plans were developed. Between A.D. 1050-1150 (Stirling Phase), the city began to grow, and the first stockade was constructed (Aten and Bond 1974). During the Morehead Phase (A.D. 1150-1250), Cahokia reached the height of its complexity and regional influence. Maximum population size during this period have varied widely from 40,000 to near 20,000 (Aten and Bond 1974; Pauketat and Lopinot 2000; Pauketat 2004). Between A.D. 1250-1500 (Sand Prairie Phase), the site began a gradual decline (Aten and Bond 1974). Oneota inhabitants established smaller villages near the site after A.D. 1400, and by

A.D. 1600, Native Americans associated with the Illinois confederacy occupied the area. French missionaries also briefly occupied the site in the early 1700s, and in the early 1800s, Trappist monks resided near what is now known as Monks Mound (Aten and Bond 1974).

Key features of the site include at least 120 earthen mounds of varying size and purpose. Platform mounds served as bases for ceremonial or residential structures, while others contained burials of high-ranking members of society, and perhaps their retainers or human sacrificial victims (Aten and Bond 1974). The largest of these mounds, Monks Mound, is the largest prehistoric earthen mound in North America. Other prominent aspects of the site include a rectangular town plan aligned to north/south and east/west axes, a wooden palisade with circular and rectangular bastions that surrounded the inner precinct of the site, a woodhenge area where multiple henges were constructed and operated as solar calendars, and groupings of mounds and houses that formed subcommunity areas (Aten and Bond 1974).

A total of 173.45 hectares (428.60 acres) of Cahokia Mounds, as delineated for the NHL and NRHP, fall within the project footprint (Figure 2.1). These include site divisions 11S34/5, 11S34/6, 11S34/7, 11S34/8, 11S34/9, 11MS2/1, 11MS2/4, and 11MS2/6.

2.2 UNESCO World Heritage Site List

The Cahokia Mounds site is one of only 23 UNESCO World Heritage Sites within the U.S. Of the 23 UNESCO World Heritage Sites within the U.S., Cahokia Mounds is one of 10 that are designated as cultural sites. Inscribed as a World Heritage Site in 1982, the UNESCO designation recognizes the site's significance as the largest pre-Columbian settlement north of Mexico (UNESCO 2013). The site is also noted as the preeminent example of the Mississippian cultural tradition, which at its height, stretched throughout Mississippi River Valley and into the southeastern U.S. The UNESCO listing acknowledges the site's importance as representative of a preurban society in which a political and economic hierarchy facilitated organized labor, communal agriculture, and trade as reflected in the site's layout and design (UNESCO 2013). The current World Heritage Site boundary incorporates a total of 540 hectares (1,460 acres).

The 2013 UNESCO periodic report notes that the site has no protective buffer in place currently, nor was one implemented at the time of inscription (UNESCO 2013). However, the report also remarks that the site is owned and operated by the State of Illinois as a State Historic Site (via the Illinois Historic Preservation Agency[IHPA]) and protected by state law under the Archaeological and Paleontological Resources Protection Act (20 Illinois Compiled Statutes 3435, 1990), Human Skeletal Remains Protection Act (20 Illinois Compiled Statutes 3440, 1989), and Illinois State Agency Historic Resources Protection Act (Illinois Compiled Statutes 3420, 1990 as amended). Further, the report finds that the site is afforded the highest available level of U.S. federal cultural resources protection as an NHL site.

Review of the current project area indicates that the eastern boundary runs north to south generally along North 63rd Street. As such, the project area is located adjacent to, but outside and to the west of, the westernmost portion of the Cahokia Mounds World Heritage Site area (Figure 2.1).

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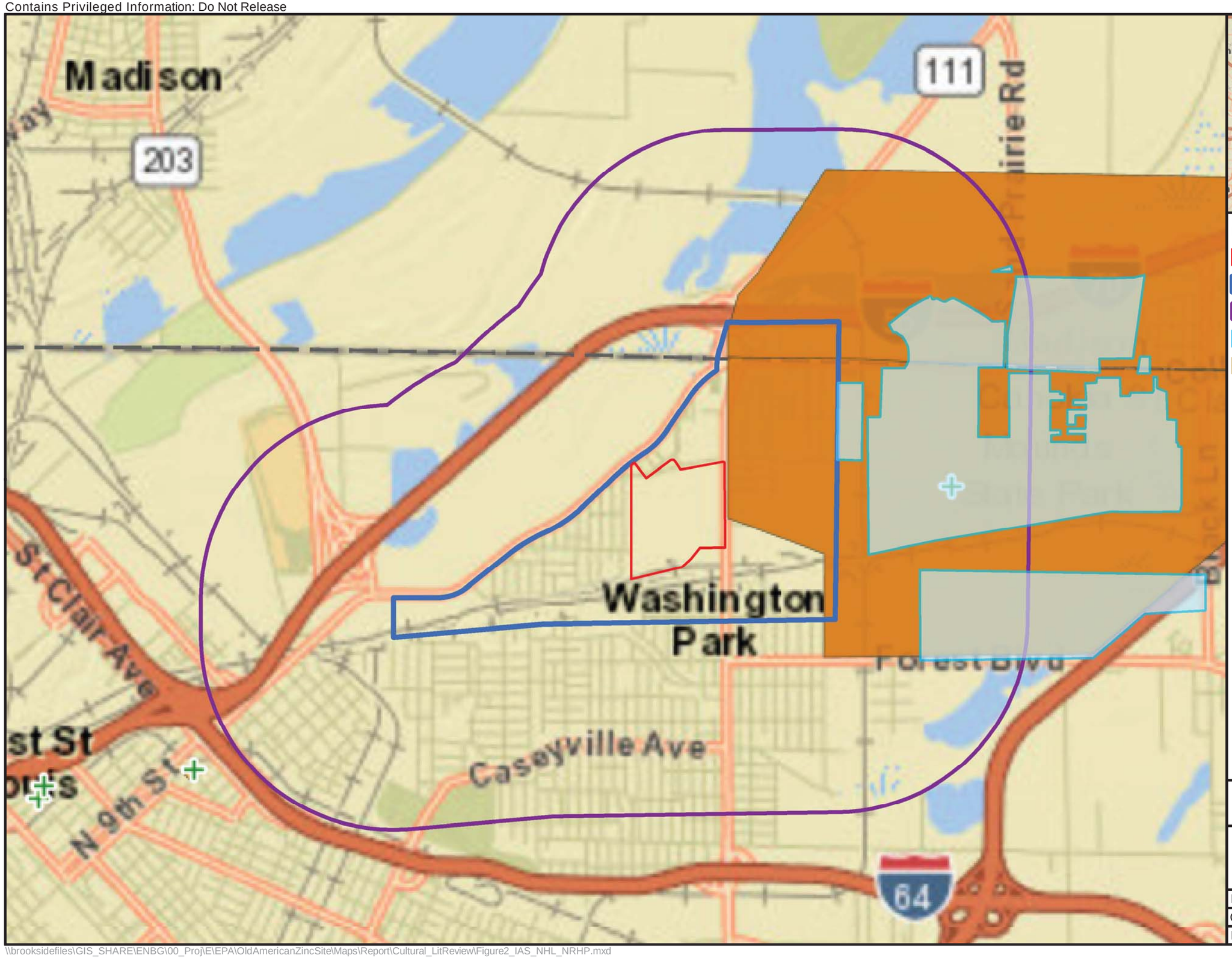

LEGEND:

- OAZ Facility Boundary
- Surrounding Properties Boundary (Approximate)
- Study Area
- Cahokia UNESCO World Heritage Boundary
- Cahokia NRHP Site Boundary

BASE MAP SOURCES:
Illinois Archaeology Survey Inventory of NHL and NRHP Sites (IAS), accessed 6/20/2018 and ESRI World Street Map Layer

N

0 760 1,520
Scale in Meters

0 2,500 5,000
Scale In Feet

Old American Zinc Plant Superfund Site
Fairmont City, Illinois

FIGURE 2.1
IAS NATIONAL HISTORIC LANDMARK (NHL) AND NRHP MAP

PN: 687729	DATE: 7/9/2018
CREATED BY: AG	ch2m:
REVIEWED BY: AF	

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2.3 Illinois Inventory of Archaeology Sites

In addition to Cahokia Mounds (11MS2 and 11S34), CH2M identified 57 archaeological sites within 1.6 kilometers (one mile) of the project (Table 2.1; Figure 2.2). Of the IAS-listed sites, including Cahokia Mounds, 30 are prehistoric, nine are historic, and 20 are multicomponent, containing both prehistoric and historic cultural materials. Fifty of the IAS-listed sites contain a prehistoric component, including 34 that have an unassigned temporal affiliation. Although many of the prehistoric sites are affiliated with more than one temporal association, the period predominately represented is the Mississippian (n=28). The remaining sites with temporal associations range from the Archaic through the Late Woodland periods. Prehistoric sites with no temporal association are largely lithic or ceramic scatters with no dialogistic material recovered. Of the 29 sites with a historic component, the majority are associated with former residential areas or farmsteads and generally date to the mid-19th century to the post-war period.

Of all sites within 1.6 kilometers (one mile) of the project, two are NRHP-listed (11S34 and 11MS2) and four have been determined NRHP eligible (11S706, 11S1445, 11MS1316, and 11MS1548). An additional seven sites are recorded with a status of "HSRPA Burial Law" (11S82, 11S706, 11S1525, 11S2040, 11MS1375, 11MS1385, and 11MS1548). This indicates that these sites may contain or have been confirmed to contain human burials and are subject to the Illinois Human Skeletal Remains Protection Act (HSRPA). Of these seven sites, 11S82 is located within the project footprint. Further, six sites are recorded with a status of having been recommended for Phase II archaeological testing or have already been submitted to Phase II testing. All remaining sites are recorded without a compliance status or are listed as having not been formally reviewed.

Six sites identified within 1.6 kilometers (one mile) of the project are located within or partially within the project footprint. The most significant of these is the NRHP-listed and NHL Cahokia Mounds site, which is divided between archaeological site number 11S34 for the portions in St. Clair County, and 11MS2 in Madison County. Both of these sites have been divided into divisions or tracts to better manage the size and complexity of the Cahokia Mounds resources. The site is divided into 12 sections in each county: 11S34/1 through 11S34/12 in St. Clair County, and 11MS2/1 through 11MS2/12 in Madison County. Within St. Clair County, sections 11S34/5, 11S34/6, 11S34/7, 11S34/8, and 11S34/9 are within the project footprint. In Madison County, sections 11MS2/1, 11MS2/4, and 11MS2/6 are located within the project footprint.

Four additional sites are located within or partially within the project footprint. Site 11S82 (Fairmont City Site) is recorded as 3 separate mound locations and one occupation area dating to the Late Woodland through Mississippian Period. Mound 1 is located between 48th and 49th Streets off of Collinsville Road, Mound 2 at 3501 Cookson Road, and Mound 3 at the southwest corner of 31st and Collinsville Road. Site 11S1142 (Ananab Tilps Site) was recorded within the upper portion of a ditch west of Illinois Route 111 and is composed of a low-density flake scatter of unknown prehistoric association. A very small portion of site 11S1184 (Chasedawn Site) is also located within the project area, northeast of North 62nd Street. This site is recorded as a Late Woodland period habitation site consisting of eight chert flakes, one biface fragment, and 2 grog/grit tempered ceramic fragments. Lastly, a small portion of site 11S1445 (Emma Frances Site) is partially within the project area along Collinsville Road. Review of IAS files indicates that this site is a Late Woodland to Mississippian period prehistoric habitation site and includes an early industrial to post-war historic component (1871-Post 1946). The site has undergone Phase II archaeological testing and was determined to be NRHP-eligible.

The majority of sites located outside of the project area are prehistoric or historic habitation areas and artifact scatters, most of which have not been formally reviewed for NRHP-eligibility. Perhaps the most noteworthy site outside of the project footprint is the Metro East Mounds site (11S706) located near the I-55/70 and I-64 interchange and the former site of the National Stock Yards. Kruchten and Koldehoff

(2009) have described this site as the second only in size to Cahokia Mounds as a Mississippian mound and town complex. They also state that Cahokia and the Metro East Mounds are linked by a series of mounds, and together the two sites functioned as the focal political and administrative center for the Cahokia polity. Multiple investigations at this site have revealed numerous mound sites and thousands of structure and pit features have been identified in association with the Metro East Mounds. At its closest, the McCarty Tract of the Metro East Mounds is located approximately 725 feet southwest of the Project area.

Table 2.1. IAS-listed Archaeological Sites within the Study Area.

Site Number/Name	Temporal Affiliation	Archaeological Site Type	Compliance Status
11S34/Cahokia Mounds	Prehistoric – Archaic, Middle Archaic, Late Woodland, Mississippian; Historic – 1673-Post 1946	Habitation/Multiple Mound Locations	NRHP-Listed; NHL
11S44	Prehistoric - Mississippian	Camp/Habitation	Not Recorded
11S45	Prehistoric – Possible Archaic; Woodland; Mississippian	Camp/Village	Not Recorded
11S82/Fairmont City Site	Prehistoric – Late Woodland; Mississippian	3 Mound Locations/Occupation	HSRPA Burial Law
11S316/Axis Site	Prehistoric – Archaic; Historic – Early 20th Century	Camps/Habitation	Recommended for Phase II
11S623/St. Martin School Site	Prehistoric – Late Woodland; Mississippian	Series of Camps	Not Reviewed
11S706/Metro East Mounds	Prehistoric – Late Woodland; Mississippian	Habitation/Multiple Mound Locations	Determined Eligible, HSRPA Burial Law
11S1142/Ananab Tilps Site	Prehistoric – Undetermined	Habitation	Not Reviewed
11S1184/Chasedawn	Prehistoric – Late Woodland	Habitation	Not Reviewed
11S1185/Dawnchase	Prehistoric – Mississippian	Lithic Scatter	Not Reviewed
11S1186/Laura D.	Prehistoric – Undetermined	Lithic Scatter	Not Reviewed
11S1187/D Site	Prehistoric – Undetermined	Lithic Scatter	Not Reviewed
11S1188/62nd Street	Prehistoric – Undetermined	Isolated Find	Determined Not Eligible
11S1206	Prehistoric – Late Woodland; Mississippian	Unspecified	Phase II, Determined Not Eligible
11S1445/Emma Frances Site	Prehistoric – Late Woodland, Mississippian; Historic – 1871-Post 1946	Habitation	Phase II Completed, Determined Eligible
11S1525/Canaday School	Historic – 1781-1900	Cemetery/Human Remains and Coffin Components	HSRPA Burial law
11S1790/Old 8th Street	Historic – 1781-1900	Habitation	Not Reviewed

Table 2.1. IAS-listed Archaeological Sites within the Study Area.

Site Number/Name	Temporal Affiliation	Archaeological Site Type	Compliance Status
11S1791/Ninth and Exchange	Historic – 1841-1870	Habitation	Not Reviewed
11S1792/Mary B. Young	Prehistoric – Late Archaic; Historic – 1871-Post 1946	Habitation	Not Reviewed
11S1793/Sexton's Subdivision	Historic – 1901-Post 1946	Habitation	Not Reviewed
11S1796/Henry Eggert	Historic – 1871-Post 1946	Habitation/Neighborhood Associated with Henry Eggert	Not Reviewed
11S1811/Block 17	Historic – 1901-Post 1946	Habitation	Not Recorded
11S2040	Unspecified (Late Woodland; Mississippian)	McCarty Tract Mound Group (Tract 7); *Previously included with site 11S706	HSRPA Burial Law
11MS2/Cahokia Mounds	Prehistoric –Late Woodland, Mississippian; Historic – Generic	Habitation/Multiple Mound Locations	NRHP-Listed; NHL
11MS462/Joseph Niehaus Site	Prehistoric –Mississippian	Habitation	Not Recorded
11MS1314/Canteen Lake #1 Site	Prehistoric –Mississippian; Historic – Unspecified	Habitation	Recommended for Phase II
11MS1315/Canteen Lake #2 Site	Prehistoric –Mississippian	Habitation	Recommended for Phase II
11MS1316/Aufderheide Site	Prehistoric –Mississippian	Unspecified	Phase II Completed, Determined Eligible
11MS1318/Truck Farm Site	Prehistoric –Mississippian	Habitation/Farmstead	Part Not Eligible
11MS1372	Prehistoric –Late Woodland/Emergent Mississippian	Unspecified	Not Eligible
11MS1373	Prehistoric –Emergent Mississippian; Historic – 20th Century	Unspecified	Not Recorded
11MS1374	Prehistoric –Emergent Mississippian; Historic – 20th Century	Unspecified	Not Recorded
11MS1375/Nasholin	Prehistoric –Late Woodland, Mississippian; Historic – 1901-Post 1946	Habitation/Mound	HSRPA Burial Law
11MS1385	Prehistoric –Mississippian; Historic – Generic	Habitation/Possible Mound	HSRPA Burial Law
11MS1468/Scott Land SIte	Prehistoric –Mississippian; Historic – Unspecified	Unspecified	Not Reviewed
11MS1471/Aufderheide Lane	Prehistoric – Unspecified Historic – Unspecified	Unspecified	Recommended for Phase II

Table 2.1. IAS-listed Archaeological Sites within the Study Area.

Site Number/Name	Temporal Affiliation	Archaeological Site Type	Compliance Status
11MS1472/Two Track House	Prehistoric – Unspecified Historic – Unspecified	Unspecified	Not Reviewed
11MS1473/Marsh Boy Site	Prehistoric – Unspecified Historic – Unspecified	Unspecified	Not Reviewed
11MS1474/Discretion Site	Prehistoric - Unspecified	Lithic Scatter	Not Reviewed
11MS1475/John Cowan Site	Prehistoric – Unspecified Historic – Unspecified	Unspecified	Not Reviewed
11MS1476/Diamond Club Site	Prehistoric – Emergent Mississippian; Historic – Unspecified	Unspecified	Not Reviewed
11MS1477/Zurkuhlen Site	Prehistoric - Unspecified	Lithic Scatter	Not Reviewed
11MS1478/GC Crater Minor	Prehistoric - Unspecified	Lithic Scatter	Not Reviewed
11MS1479/GC Crater Site	Prehistoric - Mississippian	Unspecified	Not Reviewed
11MS1514/Sweet Flower Site	Prehistoric - Mississippian	Possible Habitation/Unspecified	Not Reviewed
11MS1548/Morrison Site	Prehistoric – Emergent Mississippian, Early Mississippian	Habitation/Village	Determined Eligible, HSRPA Burial Law
11MS1684	Prehistoric - Unspecified	Lithic Scatter	Not Reviewed
11MS1685	Prehistoric - Unspecified	Unspecified	Not Reviewed
11MS1704	Prehistoric – Late Woodland, Mississippian; Historic – Generic	Habitation	Not Reviewed
11MS1705	Prehistoric – Late Woodland, Mississippian	Habitation	Not Reviewed
11MS1706	Historic – 1841-1870	Unspecified	Not Reviewed
11MS1712	Prehistoric – Late Woodland, Mississippian; Historic – Generic	Habitation	Not Reviewed
11MS1713	Prehistoric – Late Woodland, Mississippian	Habitation	Not Reviewed
11MS1715	Historic – 1841-1870	Habitation	Not Reviewed
11MS2043	Prehistoric – Unspecified; Historic – Post 1946	Lithic Scatter/Historic Scatter	Not Reviewed
11MS2044	Historic – Generic	Unspecified	Not Reviewed
11MS2045	Prehistoric – Unspecified; Historic – 1901-Post 1946	Lithic Scatter/Historic Scatter	Not Reviewed
11MS2046	Prehistoric – Unspecified	Lithic Scatter	Not Reviewed

Table 2.1. IAS-listed Archaeological Sites within the Study Area.

Site Number/Name	Temporal Affiliation	Archaeological Site Type	Compliance Status
11MS2211	Prehistoric – Late Woodland, Mississippian	Habitation	Not Reviewed

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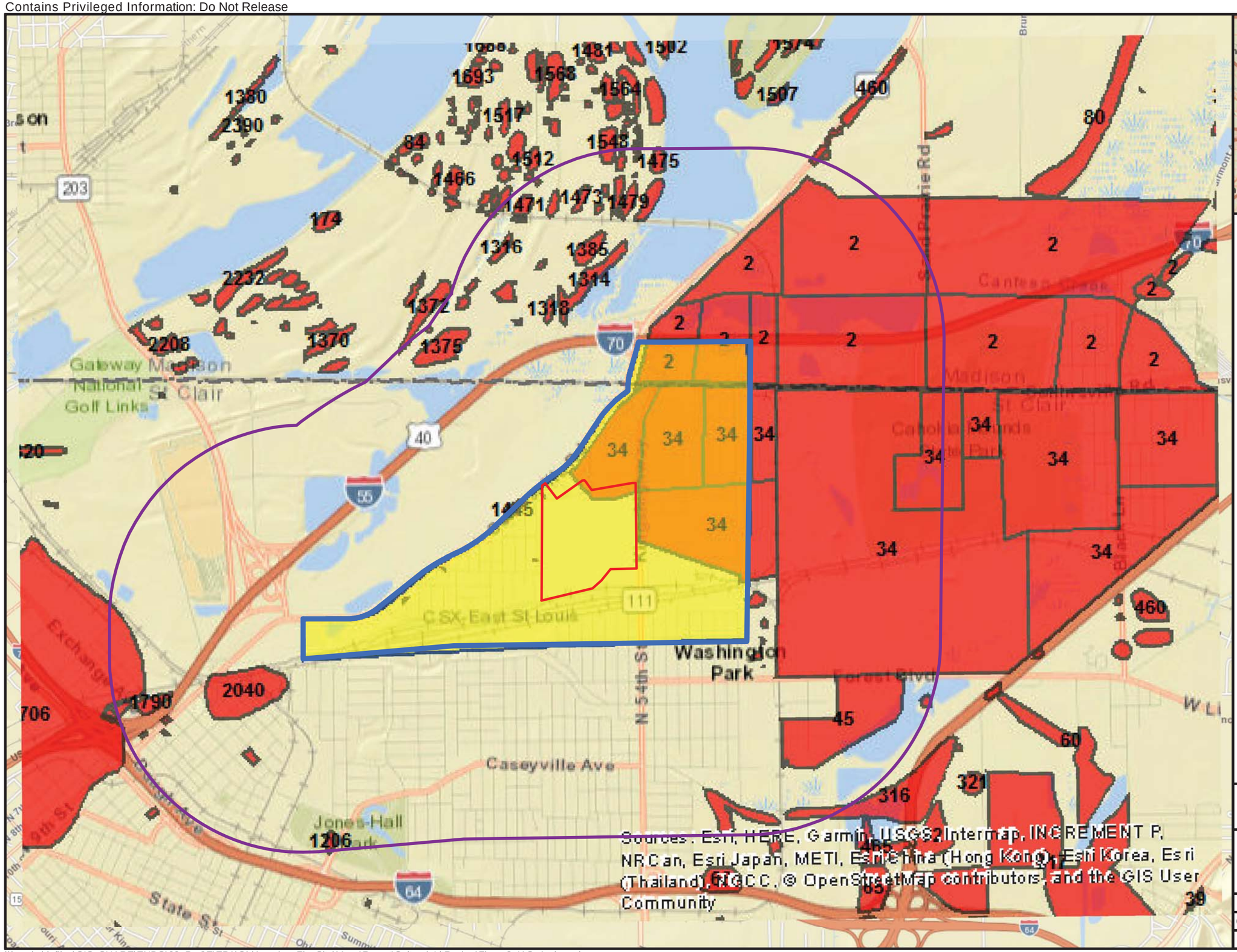

LEGEND:

- IAS Archaeological Site (number represents site ID)
- OAZ Facility Boundary
- Surrounding Properties Boundary (Approximate)
- Study Area

BASE MAP SOURCES:
Illinois Archaeology Survey Inventory of Archaeological Sites (IAS), accessed 6/20/2018 and ESRI World Street Map Layer

N

0 760 1,520
Scale in Meters

0 2,500 5,000
Scale In Feet

Old American Zinc Plant Superfund Site
Fairmont City, Illinois

FIGURE 2.2
IAS INVENTORY OF ARCHAEOLOGICAL SITES MAP

PN: 687729	DATE: 7/26/2018
CREATED BY: AG	ch2m.
REVIEWED BY: AF	

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2.4 Illinois Archaeology Survey - Mound Sites

Twenty-two IAS-listed Mound sites have been documented within 1.6 kilometers (one mile) of the project (see Figures 2.3). All 22 of these records correspond to inventoried IAS archaeology sites with mound components or recorded with a HSRPA Burial Law status (likely to contain burials) as included in Section 2.3 above. Many of these records correspond to areas where numerous mounds have been inventoried, and therefore are not indicative of 22 individual mounds; rather they indicate 22 areas that contain one or more mounds. These sites are 11S34 and 11MS2 (Cahokia Mounds), 11S82 (Fairmont City Site), 11S706 (Metro East Mounds), 11MS1375, 11MS1385, 11MS1548 (Morrison Site), and 11S2040 (McCarty Tract). Of these, Cahokia Mounds (11S34 and 11MS2), and the Fairmont City Site (11S82) are located within portions of the project footprint.

2.5 HARGIS-Listed Resources

There are a total of 26 HARGIS-listed resources within the 1.6-kilometer (one mile) study area (Table 2.2; Figure 2.2). All of the identified HARGIS resources are located within St. Clair County. The Cahokia Mounds site represents the only NRHP-listed HARGIS resource within 1.6 kilometers (one mile) of the project. Two additional resources have been determined NRHP-eligible. These include a bridge (HARGIS #154974) carrying 4th Street over Schoenberger Creek and a bridge (HARGIS #154975) carrying 32nd Street over Schoenberger Creek. The remaining 24 HARGIS-listed resources have not been evaluated for NRHP-eligibility or the status was not recorded. These resources are predominately residential, or church properties located south and west of the project area, near the Rose Lake neighborhood and the I-55/I-70 and I-64 interchange. Only one HARGIS-listed resource is located within the project footprint. Resource 522423 is a single house inventoried as “Rural Survey Property.”

Table 2.2. HARGIS-Listed Resources within the Study Area.

HARGIS Number	Property Name	NRHP Status	Location
200451	Cahokia Mounds	NRHP-Listed	7850 Collinsville Road, Cahokia Mounds State Park
522423	Rural Survey Property	Undetermined	3N 9W S34
104310	----	Undetermined	1648 46th
154974	Bridge carrying 40th St. over Schoenberger Creek – E. St. Louis	Determined NRHP-Eligible	0.03 mile north of Park Drive
154975	Bridge carrying 32nd St. over Schoenberger Creek - E. St. Louis	Determined NRHP-Eligible	0.06 mile north of Park Drive
104222	----	Undetermined	3912 Caseyville
103767	----	Undetermined	3901 Caseyville
104221	----	Undetermined	3717 Caseyville
104309	----	Undetermined	1782 36th
104308	----	Undetermined	1752 36th
104228	----	Undetermined	3205 Forest
104236	----	Undetermined	3242 Lincoln

Table 2.2. HARGIS-Listed Resources within the Study Area.

HARGIS Number	Property Name	NRHP Status	Location
104237	----	Undetermined	3248 Linden
104251	----	Undetermined	1707 Park
103795	----	Undetermined	1640 25th
103796	----	Undetermined	1800 25th
103779	----	Undetermined	2030 Lynch
104282	----	Undetermined	1516 Winstanley
104281	----	Undetermined	1326 Winstanley
104292	----	Undetermined	1101 9th St.
103529	----	Undetermined	Southeast corner Baugh and 9th
104215	----	Undetermined	919 Baugh
163508	----	Undetermined	20th St. at I-64
104216	----	Undetermined	1325 Baugh
104217	----	Undetermined	1405 Baugh
103763	Immaculate Conception Church	Undetermined	Northeast corner of Baugh and 15th

2.6 Illinois State Museum and Illinois Archaeology Survey Cemetery Files

One previously inventoried cemetery is located within 1.6 kilometers (one mile) of the project (see Figure 2.4). The Canaday School cemetery (IAS cemetery index #163201525), located outside of the project area along Lake Avenue between North 15th and North 18th streets, is also listed in the IAS as archaeological site 11S1525. Site records indicate that in 2002, during demolition of the Canaday School and construction of the new Emerson Park School in East St. Louis, human remains, and coffin components were discovered. Archaeological survey work conducted at the site following the discovery resulted in the excavation of a small portion of the site, which identified of a total of 200 historic-era graves (Koldehoff et al. 2002). Historic research at the site indicated that the cemetery was opened in 1817, and later closed in 1889. Tombstones collected during the excavations dated to the 1870s and 1880s, with coffin and hardware being typical of the mid to late nineteenth century. Archival research indicated that the cemetery was moved prior to construction of the Canaday School in 1919; however, archaeological results suggest that tombstones were removed but the human remains were not (Koldehoff et al. 2002). Osteological investigations displayed a wide range of ethnicities among the individuals, some of whom has indications of nutritional distress and poor dental hygiene. Koldehoff et al. (2002) state that the cemetery was largely intact and may contain as many as 4,000 burials. Additionally, two prehistoric pit features and 14 artifacts were found in association with the site, indicating that the location was also utilized during the Early Woodland period (Koldehoff et al. 2002).

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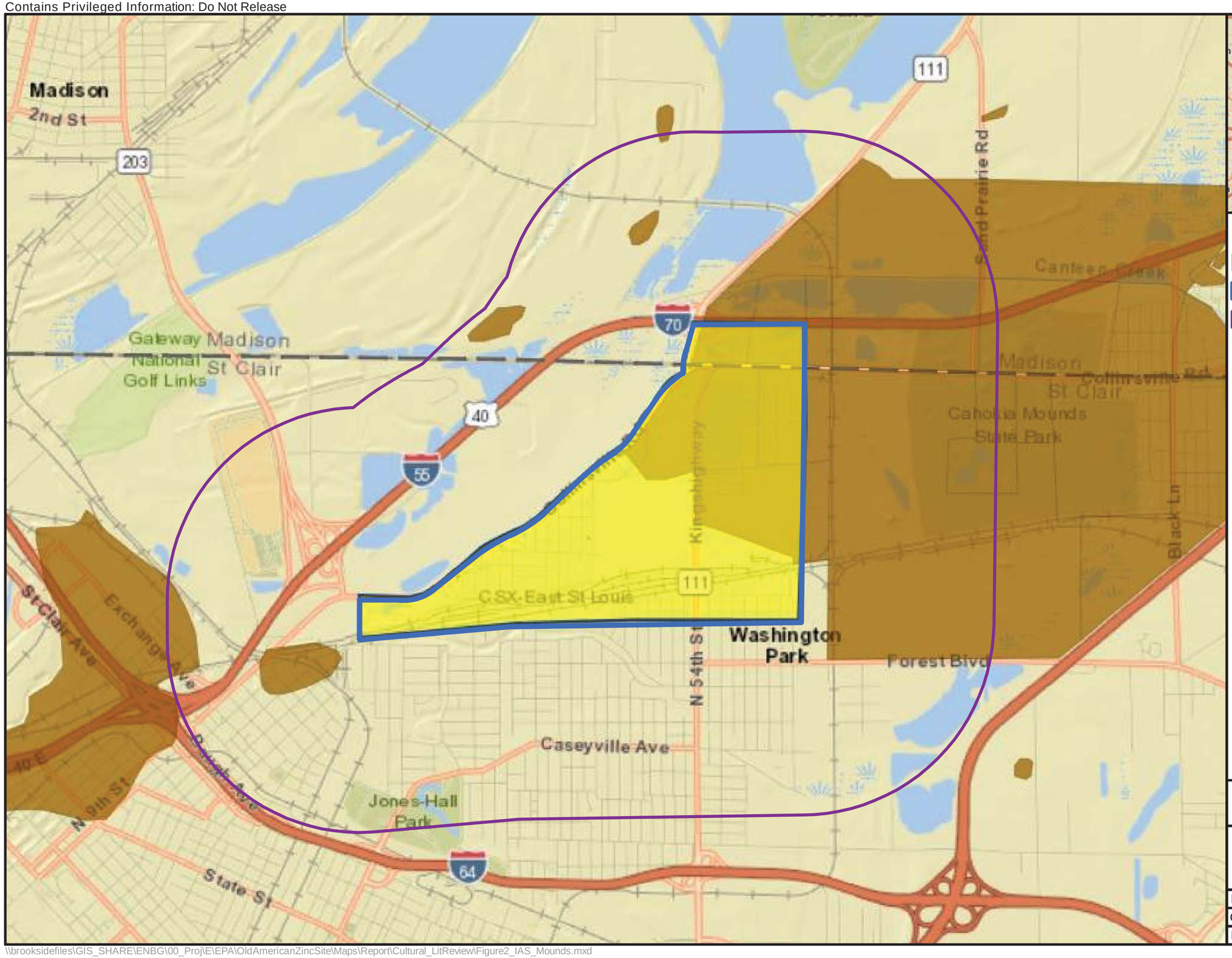

LEGEND:

- IAS Mound Location
- Surrounding Properties Boundary (Approximate)
- Study Area

BASE MAP SOURCES:
Illinois Archaeology Survey Inventory of Mound Sites (IAS), accessed 6/20/2018 and ESRI World Street Map Layer

N

0 760 1,520
Scale in Meters

0 2,500 5,000
Scale In Feet

Old American Zinc Plant Superfund Site
Fairmont City, Illinois

FIGURE 2.3
IAS MOUNDS MAP

PN: 687729	DATE: 7/26/2018
CREATED BY: AG	ch2m
REVIEWED BY: AF	

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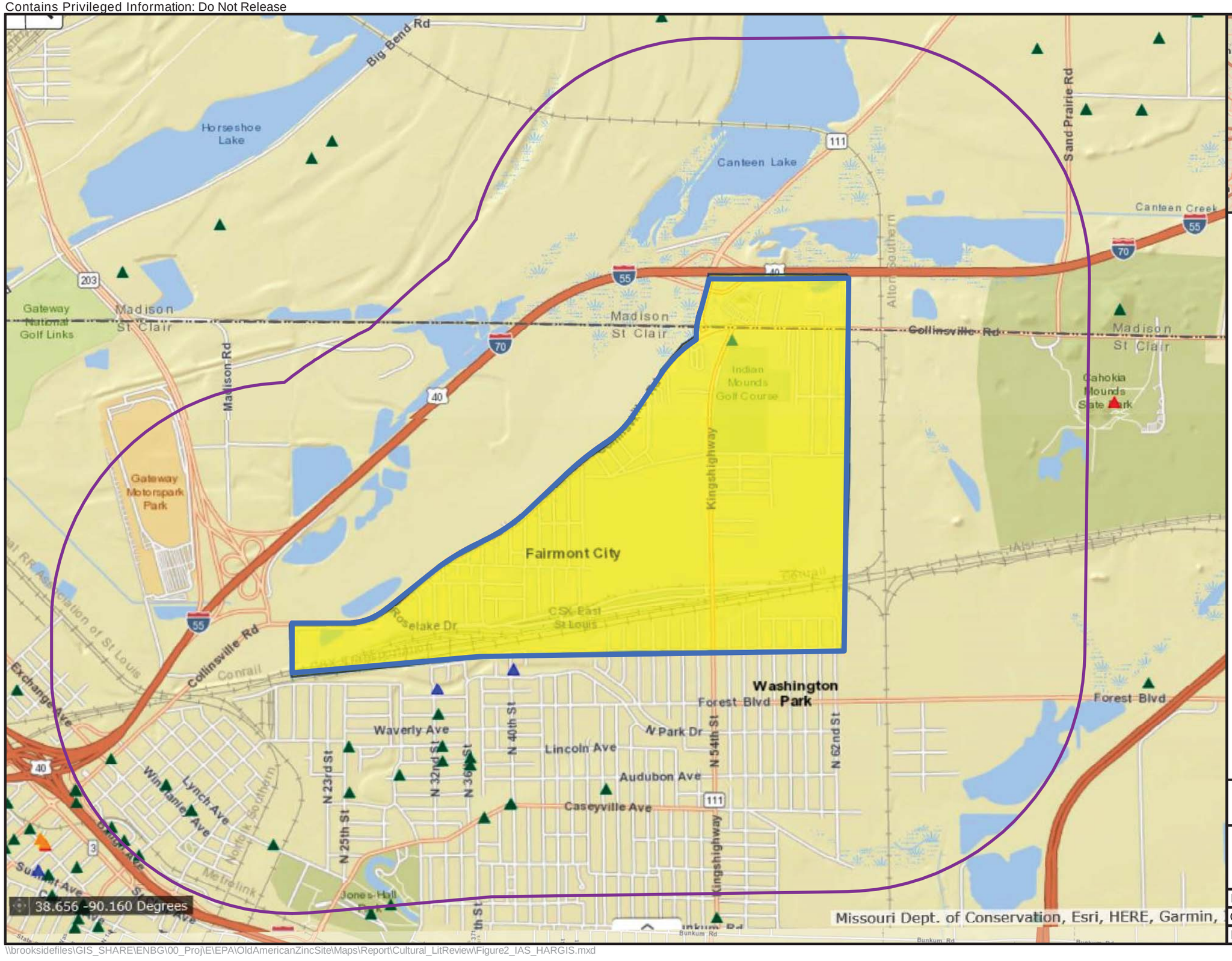

LEGEND:

HARGIS Resources:

- Determined Eligible for the National Register (NR)
- Entered in the NR
- Part of a NR Historic District
- Undetermined
- Surrounding Properties Boundary (Approximate)
- Study Area

BASE MAP SOURCES:
Illinois Historic and Architectural Resources (HARGIS), accessed 6/20/2018 and ESRI World Street Map Layer

N

0 610 1,220
Scale in Meters

0 2,000 4,000
Scale In Feet

Old American Zinc Plant Superfund Site
Fairmont City, Illinois

FIGURE 2.4
HISTORIC AND ARCHITECTURAL RESOURCES

PN: 687729	DATE: 7/26/2018
CREATED BY: AG	ch2m:
REVIEWED BY: AF	

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2.7 Cultural Resources Management Investigations

Sixty previous cultural resources investigations and two previous history/architecture surveys have been conducted within 1.6 kilometers (one mile) of the project (Table 2.3; Figure 2.5). Of the 60 previous cultural resources investigations within 1.6 kilometers (one mile) of the project, 16 surveys overlap portions of the project footprint. Section 2.7.1 summarizes the previous cultural resource investigations that overlap the project area. A total of 146.09 hectares (361 acres) have been previously surveyed within the project area.

The previous surveys conducted within the study area were primarily for transportation, water line or utility installation, natural resource and wetland reclamation projects, and academic investigations associated with Cahokia Mounds or East Metro Mounds sites. Five previous survey areas identified have temporary identification numbers that produced no results in the CRM report database for review. These include survey numbers 90002, 90706, 91791, 92043, and 96012. Of these, survey ID 90002 is located within the project footprint and discussed in further detail in Section 2.7.1. Survey numbers 90706, 91791, and 96012 are located in proximity to the East Metro Mound site and may be related to investigations into resources associated with this site. Survey number 92043 is located adjacent to survey 3600, which was a 1991 Phase I survey of a Borrow Pit location north of I-55/I-70 (De Mott 1991). Further, multiple previous survey areas are labeled as 99999, indicating that surveys that were mapped prior to the document database, and therefore do not correspond to available report records in the CRM report database. Many of these locations appear to align with transportation corridors, and therefore may be associated with railroad and roadway development projects.

Table 2.3. Previous Cultural Resources Surveys within the Study Area.

Report Number	Author(s)	Year	Title
234	Dorwin et al.	1981	An Archaeological Reconnaissance of Two Alternative Common Trailer of Flat Car Yard Locations in the East St. Louis Marge Project Area
361	Unsicker and Lange	1981	Report of Archaeological Investigations of the Area to be Affected by the Proposed Rail Connection Between the Baltimore and Ohio and the Louisville and Nashville Railroads in East St. Louis, Illinois
584	Koldehoff et al.	1983	A Cultural Resource Survey of Ten Proposed Dry Detention Basins in the Harding Ditch Area of St. Clair County, Illinois
848	Norris	1975	Horseshoe Lake State Park Archaeological Survey
964	Williams et al.	1982	Gateway to the Past: Cultural Resources Investigations in East St. Louis
1042	Iseminger	1980	A Summary of The Surface Collection of The Mound 75 (Gas Station) Tract at Cahokia Mounds State Historic Site, St. Clair County, Illinois
2493	Gums	1988	MRTC Alton Line
3199	Simon	1990	FAP 582 (IL 111) Bridge Over Horseshoe Lake Channel Section No. 6BR Job No. P98-015-84
3600	De Mott	1991	Phase I Archaeological Survey of a Borrow Pit Location, Horseshoe Lake Area, Madison County, Illinois
4017	Lopinot et al.	1989	Archaeological Investigations of the Proposed Sanitary Sewer Collection System, Eastern Portion of Village of Fairmont, St. Clair and Madison Counties, Illinois
5169	Holley et al.	1992	Archaeological Investigations at the Rouch Mound Group, Cahokia Mounds State Historic Site

Table 2.3. Previous Cultural Resources Surveys within the Study Area.

Report Number	Author(s)	Year	Title
6070	Markman and Mueller	1994	Cahokia Creek Camping and Recreation Development
7131	Pauketat et al.	1996	An Archaeological Survey of the Horseshoe Lake State Recreation Area, Madison County, Illinois
7214	Wells	1995	Phase I Survey, East St. Louis Housing Authority
7215	Wells	1995	Phase I Survey, East St. Louis Housing Authority
7217	Wells	1995	Phase I Survey, East St. Louis Housing Authority
7253	Holley et al.	1996	Investigations at the West Borrow Pit Mound Group, Cahokia Mounds State Historic Site
7475	Halpin	1996	Phase I Archaeological Reconnaissance Survey for the Proposed Wetland Mitigation Project in St. Clair County, Illinois
7582	Mueller and Markman	1996	East St. Louis HUD Housing Project: A Phase I Cultural Resources Survey
7681	Keller et al.	1994	Cahokia's Western Periphery: Recent Investigations on the Fingerhut Tract
7966	Witty	1996	SBI 4 Spur Ohio Avenue Between IL Route 203 and Madison Road
8385	Harl	1997	Monitoring of Replacement of Mississippi River Transmission Natural Gas Pipeline Through Four City Blocks, Fairmont City
8622	Kelly	1997	Metro East Emergency Project: Phase I, II, and III Archaeological Investigations of the Drainage Ditch Cleanout in Madison and St. Clair Counties, Illinois
8854	Holley et al.	1998	Promontory Mounds at the Cahokia Mounds State Historic Site: Results of the 1997 Field School Investigations
9116	Vollman	1998	Fairmont City Tract Phase I/II for Southwestern Bell Mobile Systems
9183	Watters et al.	1997	Investigations at Mounds 59, 60, 94 and the West Borrow Pit Group, Cahokia Mounds State Historic Site
9557	Burns and Wells	1998	Petra Chemical Sewer Extension Monitoring
9655	Booth and Koldehoff	1999	The EWP Project: Archaeological Investigations for the 1998 Metro East Ditch Cleanout Project in Madison and St. Clair Counties, Illinois
10237	Conner	1997	Phase I Archaeological Survey for Historic Properties Within Canteen Creek and Cahokia Canal Ditch Channel Rehabilitation, East St. Louis Flood Protection Rehabilitation Project, Madison and St. Clair Counties, Illinois
10359	Rohrbaugh	2000	Phase I Archaeological Reconnaissance Survey of Proposed Parking Lots at Gateway International Raceway, St. Clair County, Illinois
10551	Ott	2000	Phase I Cultural Resource Survey: Joyner-Kersee Center
10676	Witty	2000	FAP 582; IL 111 Bridge Replacement

Table 2.3. Previous Cultural Resources Surveys within the Study Area.

Report Number	Author(s)	Year	Title
10800	Keeney	2000	Phase II NRHP Eligibility Testing of Site 11S1206
10914	Witty	1999	FAP Route 582 (IL 111) from Collinsville Road (US 40) to Railroad Overpass South of Maryland Ave
11177	Boone	2000	FAP-999 New Mississippi River Crossing Wetland Mitigation Site Number 1
11199	Cramer and Naglich	2001	Monitoring Installation of Replacement Watermain, Fairmont City, Illinois
11719	Witty	2001	46th, 48th, 49th and Hallows
11764	Neal	1999	Parsons Place Apartments Phase I
11990	Naglich and Radziul	2001	Monitoring of Water Main Installation on Maryland Road, Fairmont City
12380	Harl	2002	Cultural Resource Survey of the Proposed 44th Street Extension, Fairmont City, Illinois
14014	Rickers and Wiant	2004	Phase I Archaeological Survey for Proposed Central City Property Residential Development, City of East St. Louis
14169	Latham	2003	Parsons Place Apartments Phase I
14437	Bailey and Kelly	2004	Washington Park Charles Manners School
14518	Witty	2004	FA 999/NMRC Detention Ponds North of I-55/70; East of IL 203
14554	Ott	2003	Phase I Cultural Resource Survey (Revised), Washington Park Tract
14886	Hjelsand	2005	Phase I Cultural Resource Survey: Emerson Park Subdivision, East St. Louis
15440	Witty and Koldehoff	2005	FAI/I-55/70 Bowman Avenue. & I-55 Bowman Maintenance Yard Pump Station Rehabilitation
15602	Unknown-Missing	Not Listed	Unknown-Missing (Trileaf 8921)
15725	McLaughlin	2006	A Phase I Cultural Resource Survey of a Proposed Sewer Line in Fairmont City, Illinois
16015	Kelly	2006	Jones Park Pavilion and Play Area
16115	Witty	2006	FAI 70 (I-55/70) Section 82-5 Parcel 800XC21
16293	Baskett	2007	Phase I Cultural Resource survey: River City Development-Phase II East St. Louis
16703	Witty	2007	Old Madison Road Improvements
17619	Booth	2008	Fairmont Wetland Interpretive Project

Table 2.3. Previous Cultural Resources Surveys within the Study Area.

Report Number	Author(s)	Year	Title
18732	Klein and Hawkins	2010	A Phase I Cultural Resource Survey of a Proposed Water Line in Fairmont City, St. Clair County, Illinois
90002	No Record Found in CRM Report Database		
90706	No Record Found in CRM Report Database		
92043	No Record Found in CRM Report Database		
92043	No Record Found in CRM Report Database		
96012	No Record Found in CRM Report Database		
99999	Multiple Occurrences - No Record Found in CRM Report Database		

*Shaded Rows indicate previous cultural resource surveys within the project footprint

2.7.1 Cultural Resource Reports within Project Area

In 1981, Resource Analysis, Inc. reported on the archaeological reconnaissance of two alternative Trailer of Flat Car locations for the East St. Louis Marge Project area (Survey #234; Dorwin 1981). At the time of this literature review, a full report was not available for review via the Illinois CRM Report Archive. Klein and Hawkins (2010; Survey #18732) have reported that the 1981 survey was conducted to evaluate borrow locations associated with the Marge Project, and that no archaeological sites were recorded within the survey area. However, Harl (2002; Survey #12380) states that the 1981 survey documented three small lithic scatters, but that no diagnostic artifacts were recovered, and none of the material was deemed significant. It is also noted that the area examined as part of the 1981 survey was heavily impacted by modern industrial development (Harl 2002).

The Southern Illinois University at Edwardsville conducted an archaeological investigation on behalf of the Village of Fairmont, Illinois, for a proposed sanitary sewer collection system in St. Clair and Madison Counties (Lopinot et al. 1989; Survey #4017). The project was located within five of the 23 divisions of the Cahokia Mounds site, and 7.7 kilometers of sewer line trenching was subjected to archaeological investigation and excavation monitoring. The impacted Cahokia Mound site divisions were 11MS1/2 within Madison County and 11S34/6, 7, 8, and 9, all of which are also located within the current Project footprint. No cultural resources were identified within section 11S34/9; however, multiple Cahokia occupation areas with numerous cultural features and artifacts were recorded within the remaining four sections. Within division 11S34/6, one Emergent Mississippian (Edelhardt Phase, A.D. 950-1000) occupation with three pit features (located near the Macke site, ISM site No. S-164) and 26 features, including pits, buried lenses, basins, post molds, wall trenches, and structures associated with the Master Feed and Seed Company Site (Lohmann to Stirling Phase, A.D. 1000-1150), were identified. Results from division 11S34/7 also revealed two occupation areas: a wall trench and basin feature located south of Collinsville Road and a wall trench structure identified near the location of Powell Mound. Investigations within division 11S34/8 resulted in an abundance of lithic and ceramic material recovered, including 556 debitage fragments and tools. Identified lithic tools in this area included a flake point, chert hammerstone, two retouched flakes, 36 microdrills, a quarzitic sandstone mano, and 34 pieces of

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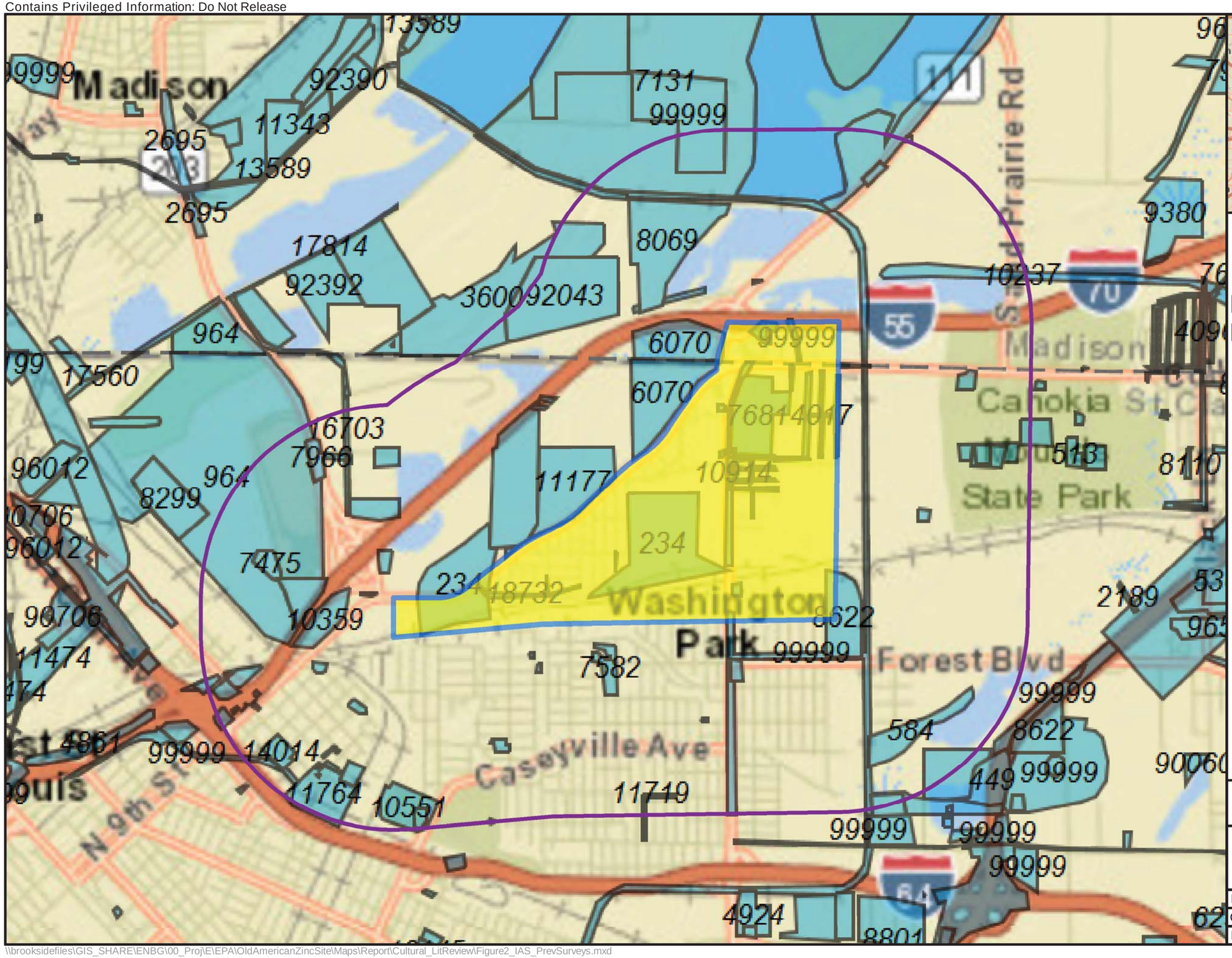

LEGEND:

- Previous Survey (number represents survey ID)
- Surrounding Properties Boundary (Approximate)
- Study Area

BASE MAP SOURCES:
Illinois Archaeology Survey Inventory of Previous Cultural Resources Surveys (IAS), accessed 6/20/2018
and ESRI World Street Map Layer

N

0 760 1,520
Scale in Meters

0 2,500 5,000
Scale In Feet

Old American Zinc Plant Superfund Site
Fairmont City, Illinois

FIGURE 2.5
PREVIOUS CULTURAL RESOURCES INVESTIGATIONS

PN: 687729	DATE: 7/26/2018
CREATED BY: AG	ch2m
REVIEWED BY: AF	

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rough rock (Lopinot et al. 1989). One historic feature was also identified within 11S34/8, composed of a molded dark-green glass base fragment, and whiteware, spongeware, salt-glazed stoneware, and an ironware fragment dating to the late 1880s. Lastly, five Mississippian Period features were uncovered in division 11MS2/1. These include a wall trench structure, a post mold or wall trench feature, two additional potential structures, and a pit feature. The project fieldwork consisted of archaeological monitoring while the trenches for the proposed waterlines were dug, and therefore additional survey within the project area was not recommended. However, the authors recommend that for future monitoring activities within the Cahokia site, areas with high potential to contain cultural resources should be excavated ahead of the construction activity, so that features may be mapped and potentially mitigated prior to proposed mechanical disturbance (Lopinot et al. 1989).

Archaeologists from Washington University and Southern Illinois University at Edwardsville presented the results of investigations of the Fingerhut Track on the western periphery of Cahokia in 1994 (Keller et al. 1994; Survey #7681). The researchers state that at the time of the report, recent studies of the Fingerhut Track had been completed by students, instructors, and volunteers associated with Washington University, Southern Illinois University, and the Cahokia Mounds Archaeological Society chapter of the Illinois Association for the Advancement of Archaeology. Much of this work was completed ahead of the construction of a golf driving range, today known as the Indian Mounds Golf Course. These efforts lead to several excavation areas, and the flagging and mapping of 1,795 surface artifacts. The report finds that the earliest occupation of the Fingerhut Track occurred during the Early Woodland Period (Marion Phase). Later, scattered Lohman and Stirling Phase Mississippian settlements occupied the area, with much of the activity of the tract attributed to lithic and shell work areas, and perhaps the production of tribute items due to the presence of microlith material and basalt residue (Keller et al. 1994). Additionally, an early nineteenth century historic occupation was noted on the eastern portion of the tract.

In 1994, Markman & Associates performed a Phase I cultural resource survey of approximately 125 acres for the proposed Cahokia Creek Camping and Recreational development project (Markman and Mueller 1994; Survey #6070). The project included the construction of roads, trailer hookups, and facilities for campers and recreational activities. A small portion of this survey overlaps with the current project footprint near Collinsville Road and Illinois Route 111. The authors found that much of the survey area consisted of low-lying and saturated wetland areas, so that shovel testing was conducted only on dryer, low rises across the landscape (Markman and Mueller 1994). No cultural resources were encountered within the survey area. The surveyors also note that surrounding site locations are situated above 125 meters (410 feet) above mean sea level (amsl), whereas the highest elevation within the project area was 123 meters (405 feet) asml.

The Archaeological Research Center of St. Louis, Inc. conducted archaeological monitoring during trench excavation for an approximately 1,200-foot-long section of natural gas pipeline along Maryland Avenue, Delmar Road, and Kinder Road, on behalf of NorAm Gas Energy Corporation (Harl 1997; Survey #8385). A low-density prehistoric artifact scatter consisting of Burlington chert flakes and one shell-tempered ceramic sherd fragment were found near Maryland Avenue. Early twentieth century historic material was also encountered throughout the excavation area. One possible pit feature was identified near Kinder Road; however, no artifacts were recovered within the feature, and no temporal association could be established (Harl 1997). No additional work within the project area was recommended.

In 1997, the Illinois Transportation Archaeological Research Project presented the results of Phase I, II, and III archaeological investigations for the Metro East Emergency Project in Madison and St. Clair Counties (Kelly 1997; Survey #8622). For this project, 213 hectares (86 acres) were surveyed for six ditch cleanout areas, as well as locations for sediment stockpiling and burn pits for tree removal. One small portion of this large survey is located within the current project footprint, which includes the area surveyed for Reach E, located near the junction of Harding Ditch north of I-64 through Washington Park to the outlet at Indian Lake near I-55/70 in Fairmont City (Kelly 1997). Four archaeological sites and one

isolated find were recorded in this area east of North 62nd Street (sites 11S1184 through 11S1188). Site 11S1184 is partially mapped within the project footprint and is recorded as a small Emergent Mississippian-period occupation. The remaining four sites include a probable Mississippian farmstead (11S1185), two unspecified prehistoric lithic scatters (11S1186 and 1187), and one chert flake recorded as an isolated find (11S1186).

Booth and Koldehoff (1999; Survey #9655) reported on the results of the Metro East Ditch Cleanout Project (EWP Project) completed by the Illinois Transportation Archaeological Research Program (ITARP) on behalf of the Natural Resources Conservations Service (NRCS). This project was composed of 436 hectares (1,077 acres) of archaeological survey across Madison and St. Clair Counties within the American Bottomland region. In total, 16,484 prehistoric and 3,264 historic artifacts were recovered. Additionally, 59 archaeological sites were recorded, and 14 previously inventoried sites were revisited. Only a very small portion of this expansive survey effort falls within the current project footprint. This includes the 1.1-hectare (2.7-acre) Washington Park Spoils area, which the authors note is located outside of the Cahokia Mounds site boundaries (Booth and Koldehoff 1999). At the time of survey, the area was used as a municipal dumping ground, and no archaeological resources were identified.

In 1999, ITARP completed an archaeological survey of about 4.5 acres for a ditch cleanout project located along Route 582 (IL 111) from Collinsville Road to the railroad overpass south of Maryland Avenue (Witty 1999; Survey #10914). Approximately 85 percent of the project was located within the National Register boundaries of the Cahokia Mounds site. The project was also located within the Ananab Tilps site (11S1142). Ten shovel tests were excavated within the project area, and archaeological monitoring was recommended during construction activities due to proximity to both the Cahokia Mounds site and Ananab Tilps site (Witty 1999).

Also in 1999, Hanson Engineers Incorporated performed a Phase I/II cultural resource survey of 0.8 acre for a Southwestern Bell Mobile systems telecommunications tower within the Fairmont City Tract of the Cahokia Mounds site (Vollman 1999; Survey #9116). Since the project was located within the Cahokia Mounds site, archaeological testing consisted of two mechanical backhoe trenches to remove potentially disturbed top soil layers in order to identify potential buried cultural deposits. Results of the trenching indicated at least one Mississippian Period house basin, multiple pit features, possible intact midden areas, and historic-era post molds (Vollman 1999). Recovered artifacts included one Scallorn point, one non-diagnostic rim sherd, multiple shell, grog, or grit tempered sherds, several Burlington or pebble chert cores and micro-cores, multiple micro blades and drills, fire-cracked rock, and numerous chert waste flakes. A general temporal association of Lohmann or Stirling Phase Mississippian was assigned to the site. Additional Phase III archaeological investigations were recommended for the site should the development of the telecommunication facility proceed (Vollman 1999).

The Illinois Transportation Archaeological Research Program conducted a 26.9-hectare (66.5-acre) archaeological survey within a portion of an abandoned golf course proposed to be converted into a wetland in October 2000 (Boone 2000; Survey #11177). Most of the survey area lies outside of the Project footprint and to the north of Collinsville Road. However, small portions of the survey extend into the current project boundary, south of Collinsville Road. The survey identified site 11S1445, which is also partially located within the project footprint along Collinsville Road, and consists of both prehistoric and historic material. The prehistoric element is suggestive of a Late Woodland to Mississippian Period occupation and includes an artifact assemblage composed of debitage flakes, fire-cracked rock, shell-tempered ceramic sherds, burned clay fragments, and one Madison projectile point (Boone 2000). The historic component of 11S1445 is described as an Early Industrial to Post-War artifact scatter (1871-Post 1946; Boone 2000). A geomorphological analysis conducted as part of this survey effort also found that the area along Collinsville Road contained a high potential for buried archaeological deposits due to its placement on a sandy terrace scarp (Boone 2000). The report recommends Phase II testing in the area if construction activities cannot be avoided.

In 2001, the Archaeological Research Center of St. Louis, Inc. reported on the results of archaeological monitoring performed during the installation of an eight-inch replacement water line extending approximately 100 meters (328 feet) along Jondro Road, north of Collinsville Road, in Madison County (Cramer and Naglich 2001; Survey #11199). The authors note that the project area was located entirely within the Cahokia Mounds NHL and near Powell Mound (Mound 86). Powell Mound was second in size only to Monks Mound and was the central aspect of the Power Mound group. The Powell Mound group included mound numbers 84, 86, 87, and 88 (and potentially Jondro Mound 87 and Mound 85). However, Cramer and Naglich (2001) report that Powell Mound was nearly completely destroyed by steam-shovel excavation between December 1930 and February 1931, with sediment from the mound used to fill nearby low areas for cultivation. The mound was further destroyed by the construction of a gem store in the 1960s. Archaeological investigations conducted both during and after the mechanical leveling of the mound indicate that it was initially constructed as three small core mounds and later consolidated into a single platform mound over the course of five construction episodes (Ahler and DePuydt 1987). The site location was found to have been initially occupied during the Emergent Mississippian Period, with the construction of the mound likely taking place during the Sterling phase of the Mississippian Period, ca. A.D. 1100-1200 (Cramer and Naglich 2001). Two burial chambers were located near the top of the platform, one of which was examined in 1931. This chamber measured nearly six meters (20 feet) and contained bundle burials placed on a bed of cedar and bark and covered with shell garments (Young and Fowler 2000, Fowler 1989). The top of the platform at Powell Mound also included a pyramidal mound stage with a large cedar post, which formed a line pointing east to a similar post on the southwest corner of the first terrace on Monks Mound (Ahler and DePuydt 1987). Cramer and Naglich (2001) also report that archaeological surveys in the surrounding area have revealed a shell bead burial at mound 87 (Fowler 1989), Mississippian village occupation north of the Powell Mound (O'Brien 1972), and Mississippian houses and burial grounds south of the Powell Tract within the Fingerhut Tract (Fowler 1989). Despite the high probability of encountering cultural resources, Cramer and Naglich state that only previously disturbed soils, a brick pavement layer under the existing Jondro Road, and modern material such as plastic and metal were documented during monitoring. No additional work in the project area was recommended (Cramer and Naglich 2001).

The Archaeological Research Center of St. Louis, Inc. also conducted archaeological monitoring during trenching for an approximately 300-meter-long section of water line located along Maryland Avenue (Naglich and Radziul 2001; Survey #11990). Despite the project area being located within the Macke Site and western portion of the Cahokia Mounds site, no cultural resources or artifacts were identified. Prior disturbance from the installation of a natural gas pipeline and the construction of Maryland Avenue were attributed to the lack of intact cultural deposits (Naglich and Radziul 2001). No further work was recommended for the project area.

Harl (2002; Survey #12380) conducted a cultural resource survey for a proposed 78-meter (255-foot) water line located along the eastern side of 44th Street. The project area is described as being previously disturbed due the proximity to the existing sidewalk and roadway construction, and as a result of an existing drainage pipe. All cultural material observed during the survey was modern, and no archaeological sites were identified. No additional cultural resources investigation was recommended for the project area (Harl 2002).

In 2006, The Archaeological Research Center of St. Louis, Inc. completed a Phase I cultural resources survey for a proposed 198-meter (650-foot) sewer line to service a structure located at 5501 Congress in Fairmont City, Illinois (McLaughlin 2006; Survey #15725). The report notes that the project area is located within the Fingerhut site area, included with division 11S34/7 of the Cahokia Mounds site. No cultural features or artifacts were identified following a pedestrian and shovel testing survey. Like previous surveys conducted in the area for utility installation, the lack of cultural material was attributed to previous disturbance, likely resulting from a manmade drainage that crossed the project (McLaughlin 2006). No additional work was recommended for the project area.

The Archaeological Research Center of St. Louis, Inc. completed a 1.7-acre Phase I cultural resource survey for a proposed 1,127-meter new water line extending along Roselake Road and North 38th Street in Fairmont City (Klein and Hawkins 2010; Survey #18732). The survey area was subjected to archaeological testing consisting of pedestrian walk over, shovel testing, and seven deep soil auger tests. No cultural resources were identified during the survey, and the authors note that the lack of cultural material may be due to prior disturbance resulting from the nearby residential and industrial development. Project clearance was recommended; however, construction monitoring was encouraged because of the potential for deeply buried deposits (Klein and Hawkins 2010).

Survey #90002 and one instance of survey #99999 are mapped in the northern portion of the project area, south of the I-55/I-70 corridor and north of Collinsville Road. Additional areas of 99999 are mapped near the Indian Mounds Golf Course. As stated in Section 2.7, none of these survey numbers correspond with available reports in the CRM report database. However, several have reported that multiple previous archaeological investigations have occurred in the area. For instance, McLaughlin (2006) informs that Charles Bareis (1968) examined the Powell Mound group area, and revealed many Mississippian houses, pit features, and artifacts. McLaughlin states that Bareis also conducted investigations within the Fingerhut Tract in 1962, which uncovered several features related to a Mississippian burial ground. Further, work completed by Southern Illinois University at Edwardsville at the Fingerhut Tract for the widening of Highway 111 and construction of the Indian Mounds Golf Course increased the reported size of the Mississippian burial ground in the area and suggested that there may be two separate groups of burials linked to both Lohmann and Stirling Phase occupations (Witty 1993).

2.8 County Historic Maps

To better understand the prehistoric and historic landscapes for the Project, CH2M reviewed available historic mapping depicting the project area (Table 2.4). Historical atlases dating to the late-nineteenth century depict the project area as a predominantly rural area with more developed areas located to the west toward East St. Louis.

Table 2.4. Historic Maps.

Date	Publisher	Map Title
1861	Holmes and Arnold	*Madison County, Illinois, 1861 Atlas*
1863	J.W. Holmes	*Map of St. Clair County, Illinois*
1873	Brink, McCormkick, & Co.	*Illustrated Encyclopedia and Atlas Map of Madison County, Ill*
1874	Warner and Beers	*An Illustrated Historical Atlas of St. Clair County, Illinois*
1892	Riniker, H., Robert Hagnaurer, and George K. Dickson	*New Atlas of Madison County, Illinois*
1899	Guy Beauman	*Map of St. Clair County, Illinois*
1906	Ogle, George A. & Co.	*Madison*
1936	Frank & John Hollman	*Current and Historical Atlas – St. Clair County, Illinois*

2.8.1 St. Clair County

The 1863 and 1874 atlases of St. Clair county depict the project area as largely rural and agricultural, with relatively few landowners listed in the vicinity. Cahokia Creek is shown flowing generally east to west toward the Mississippi River, and Indian Lake is located to the west of the project area. The Ohio and Mississippi Railroad is depicted running east-west south of the project area. In 1874, the St. Louis,

Vandalia & Terre Haute Railroad Company is illustrated running alongside of the Ohio and Mississippi Railroad. Additionally, the established community of Caseyville is seen to the east, while East St. Louis and Illinois City has been developed to the west. On both the 1863 and 1874 St. Clair atlases, the town of Fairmont City is not depicted. By 1899, East St. Louis has expanded in size, and developed further to the east. Indian Lake is also no longer depicted in 1899, and the area now appears parceled between landowners. The railroads to the south of the project area are illustrated as the Vandalia Line and the B&O Railroad in 1899. Fairmont City does not appear as an established community. By 1936 however, Fairmont City is shown northeast of an expanded East St. Louis. In addition, Washington Park is now depicted to the south of Fairmont City, and adjacent to East St. Louis. The railroad previously labeled as the Vandalia Line and B&O Railroad is now listed as the Pittsburgh, Cincinnati, Chicago and St. Louis Railroad.

2.8.2 Madison County

Review of the 1861 Madison County atlas reveals that much of the project area is pastoral, with a cluster of structures shown near the Village of Canteen. Both Cahokia Creek and Horse Shoe Lake are illustrated to the north. To the east, the established town of Collinsville can be seen. Interestingly, Monks Mound is illustrated south of Cahokia Creek, along with “Hotel Hubbards” to the east of the mound. Review of the 1873 atlas indicates that the area appears much the same as it did in 1861. However, more detail is provided in the area of Cahokia Mounds, and several more mound locations are depicted. In addition, a small levee is shown located south of Cahokia Creek and north of the illustrated mound locations. The small village of Canteen also appears to have been moved further to the west and is smaller in size. On both the 1892 and 1906 atlases, the area again appears mostly unchanged. However, the small levee depicted on the 1873 map is not included.

SECTION 3

Summary and Recommendations

The literature review revealed that one archaeological resource is listed as an NHL and is on the NRHP and is a UNESCO World Heritage Site, 57 additional IAS-listed archaeological sites, including six NRHP-eligible sites, 22 IAS-listed mound sites, 26 HARGIS-listed resources, and one IAS-listed cemetery have been inventoried within 1.6 kilometers (one mile) of the project. Additionally, at least 60 previous cultural resources investigations have been documented within 1.6 kilometers (one mile) of the project.

The most significant of the previously inventoried resources within the project area is the Cahokia Mounds site, which was listed as an NHL in 1964 and placed on the NRHP in 1966 (NR 66000899; 11MS2 and 11S34). The Cahokia Mounds site is one of the most prominent archaeological sites in North America. Portions of eight out of the 24 Cahokia Mound site divisions fall within the project area. This site is also a UNESCO World Heritage Site; however, the current project boundary is located outside of the current UNESCO World Heritage Site boundaries. The remaining archaeological resources within the project area are composed of Late Woodland through Mississippian Period habitation sites, resulting from the region's heavy use during these periods. Further, many of the small sites in the area are recorded with mound components of their own.

In addition, it is important to highlight that several IAS-listed resources located both within and outside of the project area are recorded as falling under the Illinois HSRPA Burial Law. For this reason, careful consideration of potential to encounter both prehistoric and historic era human remains should be taken.

Historic mapping indicates that agricultural activities dominated the project and surrounding area during the historic period, with railroad and industrial development increasing throughout the twentieth century in both St. Clair and Madison Counties. Potential historic archaeological resources within the project are likely to be related to agricultural, domestic, or industrial activities.

Review of previously identified archaeological sites and historic mapping indicate a high probability of both prehistoric and historic archaeological deposits to be located in the project's vicinity. Within the project footprint, prehistoric sites identified have often been large and complex, especially those found in association with the Mississippian Period Cahokia Mounds or East Metro Mounds complexes. Analysis of previous cultural resource reports indicate that potential site density may be higher within the northeast portions of the project area, closest to established boundaries of the Cahokia Mounds site, the Powell Mound Tract, and the Fingerhut Tract (Lopinot et al. 1989; Keller et al. 1994; Cramer and Naglich 2001). In addition, several of the previous archaeological investigations conducted within the Fairmont City neighborhood have encountered previously disturbed soils and no cultural resources in some cases (Naglich and Radziul 2001; Harl 2002; McLaughlin 2006; Klein and Hawkins 2010). Other areas that appear to have lower cultural resource probability include low-lying wetland environments (Markman and Mueller 1994). The parcels currently included in the remediation plan are located outside of the current UNESCO World Heritage Site boundaries. However, due to the surrounding high site density and documented regional prehistoric settlement, the Project area as a whole should be considered as having a high potential to contain archaeological and historic resources.

The project as currently designed consists of soil sampling from the top 24 inches below ground surface. At the base of excavations completed to the maximum sampling depth (i.e. 18 inches for properties sampled during the time critical removal action investigation and 24 inches for all other properties), XRF screening will be done to assess whether contaminants are still present in the soils. If contaminants are present above acceptable levels, excavations will resume to a depth of 30 inches. If contaminants are present at 30 inches below ground surface, demarcation fabric will be placed at that depth. Following removal of highly contaminated soils, a barrier or cap will be emplaced, followed by a layer of clean

soils. Therefore, this project is unlikely to impact deeply buried archaeological deposits within the selected parcels. However, if project plans change, additional parcels are added, or archaeological materials are identified during the soil sampling and removals, additional consultation with the Illinois Historic Preservation Division is strongly recommended.

SECTION 4

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